ISFIRE 2009

International Symposium for Innovation in Rural Education

Improving Equity in Rural Education

Symposium Proceedings

Editors: Terry Lyons, Joon-Yul Choi, Greg McPhan

University of New England, Armidale, NSW, Australia

11-14 February 2009

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Preface

The concept of an international symposium on rural education arose from a meeting between members of the SiMERR National Centre, Australia and the NURI Teacher Education Innovation Centre (NURI-TEIC) at Kongju National University, Korea in 2007. Despite the very different national contexts, the teams were struck by the similarities of the challenges facing rural schools in the two countries, and curious about the degree to which these challenges were shared by other countries. At a subsequent meeting in Australia in December 2007, the two centre Directors - Professor John Pegg (SiMERR) and Professor Youn-Kee Im (NURI-TEIC) - agreed on a framework for the first International Symposium for Innovation in Rural Education (ISFIRE).

This volume consists of the keynotes and refereed papers presented at ISFIRE 2009. The papers provide insights into rural education in Australia, Bhutan, Canada, Korea, Norway, South Africa and the United States along the following themes:

1. Promoting rural policy initiatives;
2. Nurturing the rural teacher experience;
3. Enhancing rural student experience and growth;
4. Optimising the curriculum;
5. Improving resources in rural schools; and
6. Addressing special issues in rural education.

The authors and titles of a further 23 presentations based on refereed abstracts only are listed at the end of this volume. The abstracts for these presentations can be found in the symposium Program.

The academics and practitioners who came together for this symposium are passionate about rural education and have dedicated their time and capacities to working for the benefit of rural teachers, students and communities. The papers in this volume offer direction not only for Australia and South Korea, who jointly hosted this symposium, but for all countries in which rural education is contested ground. The keynotes in particular contribute rich perspectives on rural education trends, policies and practices. We hope that this volume generates a greater appreciation of the advantages of rural education and the many innovative approaches being implemented to meet its challenges.

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NURTURING THE RURAL TEACHER EXPERIENCE: LESSONS FROM THE UNITED STATES

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ABSTRACT

Rural places and schools are diverse, presenting challenges for teaching and for understanding the needs of rural teachers. The recent NCES Report on Status of Education in Rural America indicates "no measurable differences" in rural and non-rural education. However, the voices of rural teachers tell us a different story. How can we understand the needs of rural teachers? How do we nurture them, so they can give their best to teaching rural children and youth? Some answers include: accepting and supporting them and their families, supporting their efforts at all levels of school and community, educating rural community members beyond schools, reaching out and reaching in with professional development opportunities, and creating and supporting professional communities of practice. This paper views the needs of rural teachers from both broad and close-up views, considers issues of recruiting and retaining high quality teachers, and includes the perspectives of teachers from across the US.

Keywords: ***Rural Teachers, Rural Schools, United States***

1. INTRODUCTION

Rural places in the US are as diverse as the American landscape. They include majestic redwood forests of the West Coast and scrub forests of the rural Midwest, moss-hung neverlands of the Southern everglades and picturesque, painted plateaus of the Southwest. Rural America is built on long, dusty rural roads that are home to wealthy, established families, to deeply traditional and spiritual peoples dedicated to living simply, to dealers of crack cocaine and methamphetamines, and to poor migrant workers struggling to survive. Rural areas are where the annual increase in immigrants doubles populations annually, and where families steeped in generations of old ways must adjust quickly to face new challenges in the twenty-first century. These snapshots are just a fraction of the diversity of rural America.

In such places, teachers are needed who will meet a stunning array of needs, manage the challenges of governmental demands, teach to a range of subject-areas and life skills, juggle a host of extracurricular and community roles, and fuel the life aspirations of diverse children. Rural education and teachers are diverse, like the land they live and work in. Just as we cannot understand that land by mixing all of its colors and structures together, we cannot understand rural education by washing all of its contrasts to grey.

By their own admission, rural school districts often experience difficulty attracting and retaining high quality teachers. With children and families geographically and socially isolated from many other education-related resources, the strength and stability of local teaching staff is critical to educational development. Education and development are, in turn, critical to individual and community health and well-being. Given the importance of recruiting and retaining highly qualified teachers, how do we attract and develop rural teachers at all levels?

What helps? What stands in our way? What can we do to problem-solve for these issues? These are the questions I will tackle in this address.

2. STATUS OF RURAL EDUCATION?

The US government's recent report, Status of Education in Rural America (NCES, 2007), reflects a wide-angle view and is very optimistic on demographics and outcomes. To read its summary and highlights, one would assume that rural education is in great shape. Yet many studies focused in local areas underscore needs that are inconsistent with this broad perspective, and will be missed if we all merely nod appreciatively at the USDE report and decide that the work has been done.

This report is based on the 2006 NCES urban-centered locale categories (NCES, 2006). The reclassification affected about 6% of districts, but overall produced just a 1% increase overall in districts classified as rural. In this categorization system a remote town (inside an urban cluster) may be farther from services and be characterized by the same geographic and social isolation as a rural area. Yet the two are presented as distinct groups in the NCES classifications. The range of fringe-to-remote "towns" and fringe-to-remote rural areas takes in an amazing range of areas and may mask rural differences, contrasts that are then washed out to no difference in the summary statistics of the NCES report. Overall, about half of operating districts and a third of all US schools are in rural areas, a portion that would seem to demand more attention than it gets in educational policy, until you recognize that these many schools educate only about one fourth of the students in the nation, and are located farther from government centers where their voices could be heard. Even so, some benefits have been initiated out of this report, including that the federal government now requires 30% of research done by government-funded research laboratories to address rural needs. This should mean that more research is done attending to the reality of rural issues and the needs and experiences of rural teachers; the danger, of course, is that it may still recede to shades of grey.

Even with the new classifications, the 2007 report tells us little that is surprising about rural teachers compared to non-rural teachers. They teach in smaller schools than non-rural teachers, yet the ratio of students-to-staff is not much less. Pay is lower for rural teachers, even after adjusting for cost of living, though they have similar education and experience to their non-rural counterparts. They report fewer serious behavioral problems from students and say that they are more satisfied with their resources and support from administration and parents than do their non-rural peers. According to the report, rural students face less abject poverty than most other areas, and dropout is only in the middle range, at 11% (higher than suburbs, but lower than cities). The terms "no measurable difference" occurs over and over, and anyone who spends time in rural schools and communities must ask, "Is there really no important difference, or is the diversity in fact so wide-ranging that it must be addressed locally, with a microscope rather than with this wide-angle lens?" I argue the latter.

In the diversity of rural America lie its greatest strengths and its greatest challenges. Rural is not homogeneous, though most rural places share some characteristics implicit in their classification as rural. Yet the power of rural communities to attract and retain high-quality teachers lies in their very diversity, the uniqueness of place, of culture, of personality. The challenge in research and policy is to recognize the strength and diversity of rural schools and teachers, not letting their contrasts fade to a uniform grey.

3. NEEDS OF RURAL TEACHERS

Getting teachers to come to any area, and to rural areas in particular, requires that the school district and community provide for their needs. These include jobs for spouses, safe places to raise families, quality educations for their own children, adequate salaries and compensation, and acceptance as part of the local community. In talking with hundreds of rural teachers, I have never heard one say, "I do this job for the money", and never seen that reason quoted in the research of others. Though they need to live and support themselves and their families, money is not primarily what drives rural teachers. What they say brings them is their drive to make a difference, to see youth learn and succeed, and to find a place to matter.

Keeping teachers in any area requires, in addition to what draws them, available resources to do their jobs well, ongoing opportunities for good professional development and personal growth, and positive work environments. They need current textbooks and access to supplements, activities, and the ideas of others to draw on. This access to resources is even more important for rural teachers than for their non-rural peers, as a rural teacher may be the only one teaching math or science, history or social studies in the school or the entire district, and have no proximate subject area colleagues with whom to share ideas. Teachers need to keep learning, for continued licensure and for personal growth, and finding themselves remote can challenge their professional development. In the rural North Central US, remoteness is a ten-hour drive each way to workshops, and in the Pacific Islands it is two days of island-hopping on small boats to a professional event.

4. PROFESSIONAL DEVELOPMENT

If qualified teachers are hired, even if (as the NCES Report says) rural teacher positions are no more difficult to fill, then we face challenges of inservice, ongoing professional development. One strategy for reaching rural teachers with professional development is to reach out and take it to them, such as in online and distance learning formats via technology initiatives, which are feasible if their technology infrastructure and support are adequate. Another strategy is to bring them out, to gather with peers, equip them with tools, and infuse them with ideas to take back, implement and share. This latter type of experience is the goal of many federally-funded programs for inservice teachers, which support bringing teachers from rural schools to university campuses for multi-week resident immersion programs, with training and workshops in subject area expertise and teaching strategies, peer collaboration and expert mentoring relevant to their needs and interests. Both types of professional development present challenges, and both can be expensive investments, at different levels and for different reasons.

Resident and immersion experiences are most often available in the STEM areas (science, technology, engineering and math), and have generally been found effective in situ. Yet transfer and integration to curricula are still challenges. These needs are being addressed with technology-based supports for implementation, like learning management systems (LMSs) used to support ongoing communication, mentoring, community-building and accountability goals. Generally such programs are reporting success, and the key seems to be reaching out, bringing them together, and then using the technology to sustain the intellectual energy and social connections forged on-site, on through initial transfer and implementation of learned skills, and integration of those skills and strategies into the broader curriculum model. Rural teachers often feel alone, and this feeling may be even more acute after an immersion experience, so that the program needs to be proactive in sustaining connections to combat the contrast of isolation.

Related to success of integration is the issue of fit, of coherence that new ideas have with context of rural places and resources. Professional development skills and strategies need to be generalizable enough to transfer across areas, yet simple enough to be accomplished with local tools, and practical when viewed through the lens of local culture. In many rural areas teaching innovations that require purchase of expensive equipment or allocation of extensive technological resources, or which are contextualized to particular industries, may lack feasibility or utility. Those strategies that can be locally framed and recontextualized as appropriate, and which draw on existing (sometimes minimal) resources are often most useful. This is not surprising, yet not all professional development opportunities are designed with this degree of flexibility and sensitivity, another reason that implementation and integration are often challenging. More than one rural teacher has gone to a professional development event, seen a great idea and been unable to acquire the tools to bring it home and use it. Rural teachers who were part of an immersion experience developed extensive plans for classroom applications, only to find that they could not get the necessary equipment, so they abandoned the project and defaulted to old methods. Teachers attending a national workshop loved the new ideas, but found them difficult to make meaningful in the local context and had no help to translate them, so they tried once, felt like failures, and finally set those innovations aside. Rural teachers need tools and strategies from professional development that are flexibly adaptive to the rural context, feasible with available resources, and locally meaningful. Nurturing them through professional development opportunities includes not just getting them to the events, but framing activities and providing resources in ways they can take home and use effectively.

5. GROWING RURAL TEACHERS: ORIGINS AND SELECTION

One familiar solution to the outmigration of rural talent and the lack of qualified rural teachers is to raise locally-grown teachers, to identify them early, promote a vision of themselves as educators, and encourage them to come back and give back as the next generation of rural educators. The other side of this argument is that it can produce an egocentric and in-bred community that limits rather than enhances students' exposure to diverse others. Some rural administrators have a policy of not hiring their own graduates until they have taught elsewhere for at least three years, so they bring new ideas and different perspectives back to the school, even beyond their collegiate experiences.

Growing up rural is not necessarily cause to love rural (nor to hate it), but researchers are finding that more home-grown teachers fit with their own similar rural cultures. Some administrators worry that grow-our-own will produce a closed community, but believe that attracting those from similar places who have seen the larger world creates balance. This means that teachers in Anywhere, America need not be from Anywhere, but it often helps if they are from a place like it. Teachers raised in rural areas may more easily recognize the assets of local values and work within the local environment to leverage its benefits for teaching. Linking to and integrating the local area into teaching can be a powerful asset, as arguably the single most powerful factor predicting learning and development across contexts is relevance. Relevance makes the content matter, as it is connected to students' current experience and knowledge, to their personal and professional interests, and to their future goals, making school meaningful and important, rather than separate and esoteric. This requires connecting learning to students' prior knowledge and their contexts of understanding, the worlds they know, whether agriculture or petroleum, meat-packing or forestry, then reaching out with that understanding into a broader world. Linking teaching and learning to local area and culture can transform what may at first seem to be limitations into enablements for learning, and those who understand the culture and place may do that more easily than those foreign to it. Alternately, a wise teacher who does not

understand the local culture can make a point to learn about it and then leverage that knowledge in the classroom and beyond it.

Being from within the region means that teachers know how to survive the weather and the often-long rural commute to shopping and other services. In the Northern states of the US, they are not intimidated by ice and snow, in the Southwest by tornadoes and perishing heat, and in the West by earthquakes. It can also mean a familiarity with local people groups and their cultures, often critical in education, linking needs to family and community.

Being from an area of similar size within the region may enable teachers to accept the local rural culture more easily, its expectations, unwritten rules, and local rituals. Outsiders may question them more, and need to negotiate understanding. One teacher from a Western suburban area, teaching in the rural Midwest had difficulty getting used to youth gathering for socials around bonfires. She had seen a news story about unsupervised youth in another area dealing crack cocaine, and she worried that similar activity was possible here. Wisely, she inquired, satisfied her concerns, and finally accepted the tradition. Another new teacher from an urban area, teaching in the rural Southwest was initially judged as uncaring for not attending after-school sports and extracurricular activities. He had no responsibility for sports or related activities, so why should he go? The students and families expected all teachers to attend such events at least sometimes, and support the youth at all of their activities. He-who-did-not-go must not really care about the kids. This expectation was not in the teacher's job description, yet it was very real and had important implications for his credibility and effectiveness as a teacher in that school and community. Making these kinds of personal and social rules and expectations clear to new teachers from the outset is one strategy that helps them start strongly and avoid misunderstandings. Mentoring by administrators or by experienced teachers is important for more than just classroom strategy and management, and extends into learning to manage the culture of place that is rural America.

Preparing teachers who are not from rural origins to work within rural areas can also be accomplished with university courses and programs that address rural diversity, culture and community. Beyond coursework the intentional placement of student teachers in rural places that match their interests and background can facilitate their choice to teach in rural places after graduation. Many rural teachers say essentially what one teacher told me recently, "I came to a rural school by accident, but I stayed by choice." Many teachers tend to fall in love with rural schools, students and families if they are exposed to each other in positive ways that promote understanding and acceptance on both sides. That understanding carries them past a host of issues to achieve fit in the local community and to develop the desire to stay.

6. LIVING AS RURAL TEACHERS

A related issue is whether to live inside or outside of the community. Some teachers live outside the school community due to feelings of constraint or some particular elements of the community dynamic. One teacher told me in an interview that everyone in the small town where she lived and taught was expected to go to church on Sunday morning. Not being comfortable with the only car still in the driveway on Sundays, she went to a neighboring town and met a friend for a weekly breakfast. She had avoided looking the heathen, but was considering moving slightly farther away and commuting in. Others may choose to live outside because of the employment needs of their spouses or lifestyle choices for their families. No matter how much a teacher wants to reach rural children, practical needs exist. One rural teacher shared that while she would like to live closer to school, her husband's job and child's doctors kept her resident in a town over an hour away. This made it hard to come early, stay

late and connect with students' families as her colleagues did, and the commute in Midwest winters was beginning to wear on her. It was only her dedication to her students that had kept her hanging on for four years. For these teachers, nurturing consists of being accepted and supported in the community, accepted for who they are. If they are accepted and supported, these teachers can devote more time and attention to teaching well, a winning outcome for the whole community.

Another type of community important for rural teachers is the professional community of learning and practice. Teachers in rural schools often lack peers in teaching. Mrs. Smith is the only science teacher in her rural secondary school, and teaches every course from 7th grade Basic Science to Advanced Chemistry and Physics. She yearns to bounce ideas off someone else doing the same work, but has no one locally. She can go to the publisher's resources or the Internet for ideas and finds those useful and relevant for professional development, but she would be nurtured by having a community of colleagues to learn with and from. The cohort-based immersion programs and state subject area workshops are helpful here, for teachers to link up and share. Some teachers sustain these linkages and continue sharing after they go home, by phone, email or other methods, but only a few teachers can invest the time to participate in these opportunities. But more intentionally scaffolded communities of practice could promote nurturing for teachers like Mrs. Smith, and could reach a larger group than she might meet at any given on-site event. Recently virtual and digital communities are emerging, options that some teachers will take advantage of, but others will not.

7. RURAL PLACES AND RESOURCES

We have not yet adequately defined rural places in the US to the satisfaction of researchers, policymakers and local stakeholders. We do have the old and new definitions and classifications at various levels of government. Yet experts in rural research point out that no simple definition is adequate to capture the concept and reality of rural places in America (Coladarci, 2007; Flora, Flora & Fey, 2003; Hardré, 2007). Instead, they call for expansion of our conceptualization and documentation of what constitutes rurality. Other long-time rural researchers exhort us to include local values and cultures more fully into how we understand rurality. What is clear in this debate is that how we define and classify rural places has everything to do with how we understand them, the people who live and work in them, and the education that takes place there. We recognize that across a range of rural communities in the nation, schools often become social as well as educational centerpieces of their communities, and as such they gain identity and potential to transform social life and values, to the extent they have resources to invest in such efforts.

Many rural places still lack resources for teaching and for teacher learning. Professional development and continuing education are improving, through reaching in and reaching out; these have improved but smooth transitions are still effortful. Technology in teaching has improved, with better connectivity through federal grants and state-level commitments to funding infrastructure and networks. In-house tools are improved in many places, largely through grants and funded programs, but also through innovative business-school partnerships in many communities. In addition to funding school needs, partnering with community leaders and businesses opens up opportunities for students, such as exposure to careers they may not have considered, and the ability to work with professional role models.

Even with grants and partnership opportunities available, money is still a problem for many rural schools. For some the hard part is writing the grant, with no staff grant writers (which larger, urban and suburban districts have increasingly), no funds to attract them, and isolation

from higher education partners that may assist urban and suburban schools on grants. Sometimes funds are allocated, but schools are unable to access them. This circumstance, in the words of one rural teacher, "leaves us like hungry people looking at a feast just out of reach." State agencies are initiating efforts to bridge these gaps, working with State Regents who have responsibility to support and facilitate access to postsecondary education for all students, regional education labs and Centers, offering training and development on grant-writing, and partnering on grant-funded resources, to help rural schools reach the feast. However, once again the isolation of rural teachers makes it harder for them to travel to and take advantage of these events and opportunities. Technology is playing a role here also, with the caveat that a lack of technology access may still be a deficit in rural schools. Rural places are also more able to retain teachers if they have educational and community resources to meet the needs of the teacher's family. Many teachers have a heart for rural kids, but also harbor concerns about the appropriateness of this environment and peer group for their own offspring.

8. RESEARCH TRENDS

Like research on other marginalized subgroups, rural research has moved from somewhat simplistic stereotyping to more realistic recognition of authentic diversity. More research is acknowledging the complexity of local needs, and larger studies are no longer treating rural subgroups just as "country cousins" but as legitimately different. Researchers are recognizing that it is more than size or population, geographic remoteness and poverty that characterizes rural places. In addition there are a host of more complex and localized factors with important implications for education. These shifts to broader perspectives give me hope about the future of rural education research, especially with the inclusion of closer attention to teachers' needs, perceptions and experiences.

Important developments to support research continue to include what we understand as rural, how we fund and support rural research, and how we prepare the next generation of rural educators and researchers. It is necessary to continue working to refine our understanding of rurality, not just in the parameters of the NCES or governmental documents, but as a community of rural researchers. It is encouraging that the federal funding allocation shifted to rural, such as the requirement that 30% of research done by research centers must be allocated to rural needs, but attention must still be given to how that allocation is managed and that it provides information useful in supporting the nurture of rural teachers. Universities around the country are developing special programs addressing rural needs, preparing teachers for rural areas, including rural concerns and specializations in educational leadership to prepare rural administrators.

More research is being done that focuses on the experiences of rural teachers, and this trend needs to continue and expand. Researchers are demonstrating sensitivity to the balance of local specificity and greater rural extension and application, attending to how their findings make sense at home, and also how they may add value and meaning for other rural schools, teachers and communities. This balance has been an historical problem and perennial challenge of rural research. What we learn from research on the best and worst experiences of rural teachers in Anywhere, America, should help us frame efforts, programs, initial education and inservice professional development to nurture rural teachers elsewhere. This is a tremendous promise of these positive current trends in rural research.

9. LEARNING THAT GOES BOTH WAYS

In addition to learning to meet the needs of rural students, families and communities, we need to educate rural communities, parents and leaders about the needs of teachers and schools. This includes respecting their intelligence and acknowledging their interest in students' success, or as needed intervening in cases of true ignorance or lack of home support. Support from parents is an often-cited critical element of school success, and teachers who know that parents back them up are more confident in doing their jobs. Federal programs allocate millions of dollars annually to whole–system education, to facilitating change efforts that reach more than students. Systemic programs acknowledge that while educating students and teachers is good, including parents and community leaders offers potential for much deeper reaching and longer-lasting change that resonates through communities. In one US state an ethnically German community boasts great stability of teaching staff, with an average of over 20 years, and very little turnover. Asked why they stay, teachers unanimously cited parental support. Whatever teachers decide is necessary for students to do to learn and be successful in school, parents back them 100%. Teachers with this level of parental support and commensurate student respect and compliance are not likely to go elsewhere. Bringing parents and community members into the educational effort helps offload what is too often a sole burden for teachers, and schools have been surprised to find that some parents were waiting, willing and wanting to help, but needing to understand how.

Positive effects for students can also have a residual positive effect on teacher confidence and satisfaction. Put simply, as teachers see students succeed, they see their labor bearing fruit, gain confidence, are energized, and continue to put forth effort. Rural teachers are not often in the job for the money, but for the difference they believe they can make. As they make that difference, they invest and persist, experience energy instead of frustration and fatigue that lead to giving up. This reciprocal effect of success occurs through renewal of perceived effectiveness and competence, and nurtures teachers in a dynamic way. Whether it is a winning academic team, improved test scores, or just one student gaining interest and doing homework, seeing and celebrating success nurtures teachers. A school climate where successes are shared and mutually celebrated can promote confidence and renewal, especially if it includes small as well as great moments. For the teacher who is celebrating, it's a triumph, and for colleagues it can be a model and inspiration. This element of nurturing falls under the control of administrators, who can take responsibility for celebrating successes in their schools.

Mentoring is an important component of teaching success and support. In small rural schools the match of mentors may be more challenging than in larger schools, but innovative matching can yield great benefits. Mentors, as more experienced in teaching overall and in the community, can help a new teacher find resources for success, make judgments about how to communicate with families, and negotiate local cultural challenges. One-to-one mentoring utilizes the human side of the rural dynamic, can reduce isolation, confusion, and frustration, and help new teachers settle in and see success sooner. Perhaps even more than in non-rural settings, a good mentor in the rural school is a treasure, and an investment in mentoring can keep good teachers energized, and promote retention when without the interpersonal connection they may have gone elsewhere.

10. CLOSING THOUGHTS

My examples here have come from articles and research projects, mine and others', done largely in the US, but these lessons don't end there. Based on the time I have spent with teachers and

administrators from the rural US, Russia, China, Taiwan, Kenya, Tanzania, South Africa and Mexico, it is clear that many of these principles are shared across national and cultural lines. Rural teachers in many places feel isolated, lack instructional resources that their urban and suburban counterparts have, feel remote from similarly-minded colleagues, and yearn for innovative ideas and professional development opportunities. These needs may not surprise us, but they should concern us. We need to act on the ways we already know to nurture rural teachers and make their lives better. And we need to keep working at research that continues to reveal more ways to nurture them, support, develop and encourage them, so they can invest 100% in the education of our rural children and youth.

RELATED ARTICLES

Ballou, D. & Podgursky, M. (1995). Rural schools: Fewer trained teachers and special programs, but better learning environment. *Rural Development Perspectives, 10*, 6-16.

Barley, Z. A., & Beesley, A. D. (2007, January 10). Rural school success: What can we learn? *Journal of Research in Rural Education, 22*(1). Retrieved 5/25/07 from http://www.umaine.edu/jrre/22-1.pdf.

Coladarci, T. (2007, May 24). Improving the yield of rural education research: an editor's swan song. *Journal of Research in Rural Education, 22*(3). Retrieved 5/25/07 from http://www.umaine.edu/jrre/22-3.pdf.

Coladarci, T. & Cobb, C. D. (1996). Extracurricular participation, school size, achievement, and self-esteem among high school students: A national look. *Journal of Research in Rural Education, 12*(2), 92-103.

Colangelo, N. Assouline, S.G., & New, J. K. (1999). *Gifted education in rural schools: A national assessment.* Iowa City, IA.: University of Iowa Press.

D'Amico, J., Matthes, W., Sankar, A., Merchant, B., & Zurita, M. (1996). Young voices from the rural Midwest. *Journal of Research in Rural Education, 12*, 142-149.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior.* New York: Plenum.

Flora, C. B., Flora, J. L. & Fey, S. (2003). *Rural communities: Legacy and change* (2nd ed.) Boulder, CO: Westview Press.

Fowler, Jr., W. J., & Walberg, H. J. (1991). School size, characteristics, and outcomes. *Educational Evaluation and Policy Analysis, 13,* 189-202.

Gándara, P. Gutiérrez, D. & O'Hara, S. (2001). Planning for the future in rural and urban high schools. *Journal of Education for Students Placed At-Risk, 6*(1), 73-93.

Hardré, P. L. (2008). Taking on the motivating challenge: Rural high school teachers' perceptions and practice. *Teacher Education and Practice, 21* (1), [Sept 08]

Hardré, P. L. (2007). Preventing motivational dropout: A systemic analysis in four rural high schools. *Leadership and Policy in Schools, 6* (3), 231-265.

Hardré, P. L., Crowson, H. M., DeBacker, T., & White, D. (2007). Predicting the academic motivation of rural high school students. *Journal of Experimental Education ,75* (4), 247-269.

Hardré, P. L, & Sullivan, D. (2008). Teachers' Perceptions and Individual Differences: How they Influence Teachers' Motivating Strategies. *Journal of Teaching and Teacher Education, 24* (8), 2059-2075.

Hardré, P. L. & Sullivan, D. (in press, 2008). Student Differences and Environment Perceptions: How they Contribute to Student Motivation in Rural High Schools. *Learning and Individual Differences.*

Hardré, P. L., Sullivan, D. W., & Roberts, N. (2008). Rural High School Teachers' Best Motivating Practices. *The Rural Educator, 30* (1), 19-31.

Holloway, D. L. (2002). Using research to ensure quality teaching in rural schools. *Journal of Research in Rural Education, 17*(3), 138-153.

Howley, C. B., Theobald, P., & Howley, A. A. (2005). What rural education research is of most worth? A reply to Arnold, Newman, Gaddy, and Dean. *Journal of Research in Rural Education, 20*(8). Retrieved 5/21/07 from http://www.umaine.edu/jrre/20-18.pdf.

Jacobs, J. E., Finken, L. L.,Griffin, N. L. & Wright, J. D. (1998). The career plans of science-talented rural adolescent girls. *American Educational Research Journal, 35*, 4, 681-704.

Kao, G. & Tienda, M. (1998). Educational aspirations of minority youth. *American Journal of Education, 106*, 349-384.

Khattri, N., Riley, K. W. & Kane, M. B. (1997). Students at risk in poor, rural areas: A review of the research. *Journal of Research in Rural Education, 13*(2), 79-100.

Lemke, J. C. (1994). Teacher induction in rural and small school districts, in Rural partnerships: Working together, D. Montgomery (Ed.). Proceedings of the annual National Conference of the American Council on Rural Special Education, Austin, TX. (ERIC Document Reproduction Service No. ED 369 589).

Maehr, M. L. (1991). The "psychological environment" of the school: A focus for school leadership. In P. Thurston & P. Zodhiates (Eds.), *Advances in educational administration* (Vol. 2, pp. 51-81). Greenwich, CT: JAI.

Maehr, M. L. & Midgley, C. (1996). *Transforming school culture*. Boulder, CO: Westview Press.

National Center for Educational Statistics (2001). NCES Website, "What's Rural?" Accessed 22 February, 2001. Available at: http://nces.ed.gov/surveys/ruraled/definitions.asp

National Research Council (1993). *Losing generations: Adolescents in high-risk settings.* Washington, DC: National Research Council Panel on High Risk Youth, National Academy of Sciences.

Regional Educational Laboratory at AEL (2003). Recruiting and retaining high-quality teachers in rural areas. AEL Policy Brief. Charleston, WV: AEL.

Stern, J. D. (Ed.) (1994). *The condition of education in rural schools.* Washington, D.C.: OERI, United States Department of Education.

TOWARDS NEW DIRECTIONS FOR KOREAN RURAL EDUCATION POLICY

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ABSTRACT

Korean rural areas and the schools in these areas are being rapidly devastated and marginalized. Some people have been pessimistic for a long time to the extent that they believe the areas cannot be worse. In addition, the future of the schools in these areas is uncertain due to low fertility rates and an aging population. However, the future of education in the region may be optimistic depending on what philosophy we have for education. Indeed, rural areas have the potential to improve human life. In addition, we can reach a consensus to invest public resources in rural areas because these regions have been hit hard by the government policy to boost free trade and develop industry.

Keywords: ***Rural Education, Korean Rural Educational Policy, New Directions for Rural Eduation***

1. INTRODUCTION

Whenever I visit rural areas, I am surprised to see the schools located in great places. Some of them were established based on the residents' donations to local governments, not the budget of local authorities. It indicates the expectation and efforts of the residents for improving education in rural areas. Some schools in rural areas provided Korean language class for adults to improve literacy. Even in the rural areas, we can see the Korean passion and enthusiasm for education.

However, many schools in rural areas have been closed or used for other purposes. The majority of the remaining schools are seeing the number of students decreasing and seem to be due to close sooner or later. In the past, we focused on the educational gap between urban and rural areas in terms of student performance and educational condition. However, it is time to seriously think about the survival of the schools in rural areas.

The threat to schools stems from the migration of the population due to industrialization and urbanization. The rural area is defined as Eup and Myun (administrative districts). According to this definition, the population rate in the rural areas decreased from 67.6% in 1960 to 18.5% in 2005. In particular, the population rate in Myun dramatically decreased from 63.0% in 1960 to 10.2% in 2005. The rate was less than 50% in the mid 1970's and less than 20% in the early 2000's. The rural area, which used to be the center of Korean society, has been marginalized.

The problem of education, the crisis of the schools in rural areas resulted from external factors, particularly a decrease in the population. Then, what is the best policy to develop education in these areas at a time when we are continuously witnessing a decrease in the population in rural areas? To answer this question, I want to look at the changes in the educational policies in the area, identify critical issues in implementing the educational policies, and search for a new direction for developing educational policies in the future.

2. CHANGE OF RURAL EDUCATION POLICY: 3 KEY STAGES

After Korea was liberated from Japan, the policies to develop education in rural areas can fit into three periods. During the first period, from 1945 to 1981, the government increased opportunities for education and improved the educational conditions in the area. From 1982, the government officially merged or closed down the small schools in rural areas, which indicates a significant change in the educational policy. In addition, during the second period, many policies were carried out to improve education substantially in rural areas.

The government realized that the livelihood of rural areas is threatened by a decreasing, aging population and worsening economic conditions due to expanding free trade. In order for the sustainable development of rural areas and balanced national development, the government has been implementing a special law on improving the livelihood of farmers and fishermen and developing agricultural and fishing villages (hereinafter referred to as the Special Law) since 2004. This Special Law is meaningful in that the government introduced the law contributing to improving the quality of education in rural areas. Therefore, the period from 2004 is regarded as the one for implementing the policies to improve education quality in agricultural areas.

The following is an overview of the changes in the policy to develop education in agricultural areas and their relevance to the general educational policy and agricultural policy. (Refer to Table 1).

Table 1: Changes in the general educational policy, the agricultural policy and the policy to develop education in rural areas

Year	1950	1960	1970	1980	1990	2000	Current
General educational policy	Establishing new educational policy Expanding opportunities for education (Compulsory elementary school education)	Establishing the national educational system Expanding educational opportunities (opportunities for secondary education)		Systematic educational reform (Substantially improve primary and secondary education)		Customer-centered education (Primary & secondary education reform)	
Agricultural policy	Increasing food production Increasing farmer's income		Open policy Diversified income source Industrialization		Build competitiveness of agriculture Improve agricultural structure		Improve the living quality Harmony of life, leisure and industry
Educational policy in rural areas	Expanding opportunities of education Improving educational conditions			Merge and close small schools Improve educational programs substantially			Improve the educational quality

During the first period, mandatory education for primary school aged children was the key to the state-driven educational policy. The compulsory education of elementary school children started in 1948, when the Korean government was established. However, it faced difficulty due to the Korean War. The government implemented it in earnest by introducing 'the 6 year completion plan' in 1954. Accordingly, in the mid 1950's, many schools started to become established. The increasing opportunity offered through primary education was followed by the dramatic increase in the opportunity provided by secondary education. After the

Private School Law was announced in 1963, many private middle and high schools were established nationwide. In 1969, abolishing the entrance exam of middle schools served as a catalyst for expanding the opportunity of secondary education. In addition, the high school equalization policy implemented in 1974 contributed to expanding opportunities in secondary education. The policy to expand educational opportunities was implemented equally in both urban and rural areas.

While more and more people migrated to cities and the issue of an educational gap between urban and rural areas was raised in the 1960s, the government enacted the law on improving education in the remote and small island areas in 1967. The enactment of the law laid a foundation for providing substantial support for the schools and teachers in remote areas.

During the second period (1982-2003), the small schools in the rural areas were merged or shut down, and the educational programs were improved substantially. The educational policy in this period can be defined as the reform of education to improve its content. In particular, the improvement plan on education announced in May 31, 1995 called for student-driven education. In terms of the agricultural policy, the government was opening the agricultural administration, diversifying the farmer's income source, industrializing agricultural areas and improving the agricultural structure rather than increasing food production and income.

From 1982, the government started to merge and shut down the schools in rural areas because rural student numbers drastically decreased. The population in rural areas accounted for 42.9% of the total population in 1980 but it decreased to 25.6% in 1990 and 20.3% in 2000. As the majority of residents in agricultural areas moved to urban areas nationwide, the number of students in rural areas sharply decreased. Merging and closing of the schools in these areas accelerated in the 1990s. At that time, the educational policy for rural areas was characterized by mergers and closure of the schools and this led to arguments for and against the measure. There was a strong criticism that closing the schools devastated regional society. Various opinions were raised emphasizing the advantage of small classes in schools in rural areas. The educational authorities insisted that they should merge and shut down some regional schools in order to guarantee the students' right to learn. However, the policy was driven by the economic principle to maximize the efficiency of investment in education. During this period, the government implemented some programs to improve the quality of education in the rural areas and provided compensatory measures for the students in these areas.

During the third period, the government enacted a special law. Considering the characteristics of the rural areas, the government enacted and implemented the first 5 year comprehensive plan (05-09). The vision of the comprehensive plan was to make the rural areas, where more than 20% of the population lives, a harmonious place for life, leisure and industry. Based on this vision the focus was on four tasks; laying a foundation for welfare, improving educational conditions, stimulating regional development and facilitating multiple industries. In particular, the educational authorities set the objectives including guaranteeing educational opportunity, relieving the parents from the burden of educational expense, and improving the educational environment and the working conditions for teachers in order to improve educational conditions

3. MAJOR POLICIES OF EDUCATION IN RURAL AREAS

3.1. Increasing opportunity for education and improving educational conditions in rural areas (1945 - 1981)

Expanding the establishment of schools in rural areas

Implementing the 6 year plan for compulsory education: According to the constitution enacted in 1948, the government should guarantee everyone the equal right for education and compulsory primary education free of charge. According to the Education Law enacted in 1949, everyone has the right to 6 years of primary education, and the central and local governments are liable to provide the primary education facilities for the people. In addition, the person in parental authority and the guardian of a school age child must send him or her to an elementary school. In accordance with the law, the government established a 6 year plan, but failed to implement it due to the Korean War. After the government came up with another 6 year plan to complete the compulsory education (1954 -1959) in 1954 (after the Armistice), compulsory education was provided for elementary students in earnest. This policy led to expanding the provision of education in rural areas.

Change in the middle school entrance policy: The expanded opportunity for elementary school entrance in the 1950s caused difficulty in middle schools. As the competition to enter middle school was getting fierce in the 1960s, elementary students and their parents felt burdened. Against this backdrop, middle school entrance exams were abolished in 1969. It led to a dramatic increase in the number of middle schools in rural areas. The abolishment of the middle school entrance exam was implemented on the premise that facilities, teachers and finance would be equally distributed to all the middle schools.

The high school equalization policy was started in Seoul and Busan in 1974 and has been applied to other regions in phases. The objective of this policy was to relieve the students from the burden of entrance exams and provide equal opportunity for education. Although the policy was introduced only in some cities, it has contributed to expanding the opportunity of secondary education across the nation.

Implementing the policy to promote education in small islands and remote areas

The enactment of the law promoting education in small islands and remote areas: The law promoting education in islands and remote areas was enacted in 1967 to facilitate the compulsory education in remote areas. The major objectives of this law included: a prioritization on securing the school sites and classrooms; providing free text books; helping students to attend school easily; providing housing for teachers; an improvement of educational materials more befitting the unique characteristics of remote areas, and incentives for teachers in island and remote areas. In 1968, the island and remote areas were reclassified. Mining areas were included in the remote areas and the range of the island and remote areas was decided by by the Ministry of Education.

Providing preferential treatment for the teachers in small islands and remote areas: In accordance with the law on promoting education in islands and remote areas, in 1969 the government introduced a system to give additional points for promotion to teachers working in schools in remote areas. In addition, the teachers working in remote areas were given preferential treatment for attending courses to gain certificates qualifying them for a higher

rank. Furthermore, the government provided incentives, in the form of a study allowance for textbooks and the improvement of living conditions such as the provision of housing.

3.2. The merging and closing of small schools in rural areas and the substantial improvement of education (1982 - 2003)

The policy to merge and close small schools officially started in 1982. The first stage of this policy (1982-1998) was driven by the educational authorities of the metropolitan areas and provinces. The central government provided only a small amount of support such as a subsidy for commuting. The government recommended that the schools which had fewer than 180 students should be merged or closed in September 1981, and the number had decreased to 100 by September 1993. The government made a special order for small private schools to merge or shut down. During this period, 3,743 schools were merged or closed. During the second stage of this policy, the government provided financial support of 257.7 billion won to merge or shut down small schools in 1999, when Korea was hit by the Asian financial crisis. The government provided 500 million won for closing or merging a school, 200 million won for shutting down a school branch and 20 million won for reorganizing a school branch, leading to the merging or closure of 971 schools a year. Since 2000, when the third stage of this policy was implemented, the metropolitan and provincial education offices autonomously have merged or shut down schools. The number of schools merged or closed reached 187 in 2000, 90 in 2001, 88 in 2002, and 80 in 2003. From 2000 to 2005, a total of 5,262 schools were merged or closed. Several schools were merged into one, and public and private schools were combined into one.

Nurturing a regional hub of elementary schools: While the educational authority implemented the merging and closure of small schools as one of 'The People's Government's 100 tasks' in 1999, it decided to nurture modernized regional hub elementary schools by providing intensive financial support for the schools which would be merged or closed. The models of regional hub school include:

- A 'regional hub school complex': a school complex consisting of 2 - 4 small neighboring elementary schools and the hub school of the complex takes the lead in managing educational programs and facilities;

- an 'independent regional hub school': a relatively large, single elementary school itself runs various educational programs;

- a 'specialized regional hub school': a small school which is capable of managing itself or willing to operate specialized programs.

Nurturing a regional hub middle school: Since 1982 the educational authority had focused on merging and closing the elementary schools in rural areas due to a sharply decreasing number of students in the areas. Since 2000 the decrease in the number of middle school students in these areas has led to the nurturing of regional hub middle schools. These regional hub middle schools were operated based on the same principle as the hub elementary schools.

Designating autonomous high schools in rural areas: The Ministry of Education and Human Resources Development designated and operated 15 pilot autonomous high schools nationwide from 1999 to 2002. Since 2002, the ministry has increased the number of designated autonomous schools in rural areas. The Elementary and Secondary Education Law stipulates that the autonomous schools can admit students from all around the country, and organize their own educational programs and select the textbooks by themselves. The education

superintendents can designate the schools, considering the schools' plan to admit students, in order to diversify the educational programs and help the schools to specialize in particular areas.

Support for implementing educational courses in small schools: The educational authority developed the textbooks and curriculum for the classes in which different grades of students learn together, introduced an itinerant teacher system and organized a common curriculum for groups of small schools (common aptitude education for the students in the region).

Implementing various incentive programs

Implementing mandatory education for middle school students in Myun prior to other districts: The "mandatory education" was applied to the middle schools in islands and remote areas in 1985 and then applied to the schools in Myun and Eup (the smallest unit of a district) in 1992. In 2002, the mandatory education system for middle school students was expanded nationwide.

Preferential support including a school meal for the schools in rural areas: In 1997 the school meal program was applied to the middle and high schools in Myun and Eup. In addition, the schools in rural areas benefited from preferential support of school facilities (multi purpose classrooms, special activity rooms), native English teachers and aptitude education subsidy.

Special university admission for the students in rural areas: Since 1996 the Korean education ministry has set up a 3% special quota for admitting students from rural areas. The special admission requires the students and their parents to live in the Myun or Eup during their whole school career.

3.3. Improving the education quality in rural areas (2004 - present)

Selective development of the schools in rural areas

Intensive development of excellent high schools: In order to prevent the students in rural areas from going into the cities, the educational authority developed excellent high schools in rural areas. The government selected a high school in one Goon (a district larger than Myun), and provided financial support for it. The support improved educational programs and conditions and left the operation of school affairs to the school's discretion. The number of the selected schools increased from 7 in 2004 to 86 in 2007. As a part of the policy to nurture the high schools in rural areas, the government carried out the project to establish public boarding schools. The government has selected a public high school in one Goon (rural area) and provided financial support to establish a dormitory facility so that it can narrow the educational gap between urban schools and rural schools

Improving the operation of small schools: The educational authority combined two or three neighboring schools into one group and improved education of small schools by operating a common curriculum and facilities. Since the authority designated 6 school groups in 2004, it has tried to increase the number of groups. In addition, the authority wants to have the schools mutually support one another for curricular needs and to prevent teachers from teaching the subject they did not major in by expanding the operation of consolidated schools (elementary, middle and high schools). In addition, the government is trying to make the most of the regional characteristics of rural schools and the strong point of small schools so that they can manage their own school affairs and develop into small and beautiful schools. Furthermore it intends to

normalize the operation of the curriculum by setting up more strict criteria for organizing a class consisting of different grade students.

Expanding the opportunities for education of the students in rural areas

Expanding special university admission for the students in rural areas: The government is trying to reduce the number of people who migrate because of educational problems and expand the opportunity for rural students to go on to university by increasing the quota for special admission. By revising the related law, the government increased the quota from 3% in 2004 to 4% in 2006.

Improving kindergarten education in rural areas: The government aims at providing quality education for preschoolers and to relieve parents from the economic burden by establishing public elementary school-affiliated kindergartens in rural areas. The number of classes will increase from 3,369 in 2004 to 3,919 in 2009. In addition, the government intends to provide an educational subsidy for children aged 3 to 5 in low income brackets and financial assistance for improving the environment of kindergartens.

Relieving the rural students from the burden of a tuition fee: The government got rid of the qualifying limit of 1.5 ha for educational expense support and started to provide support for all the residents in rural and fishing villages in 2005. The government has provided interest-free student loans for university students from rural areas (since 1994) and provided a subsidy for university students studying agriculture, whose parents are farmers or fisherman (since 2004). The government is also expanding support for school meals, facilities for the disabled and a special education center in rural areas.

Improving the condition for the teachers and the students in rural areas

Securing teachers for the schools in rural areas: The government invited talented principals to the schools in rural areas and allowed teachers volunteering to work for rural schools to teach at the schools for a longer period (note: in Korean public school teaching staff must rotate from school to school every 5 years).

Providing preferential treatment for the teachers in rural areas: For the teachers currently working for the schools in remote areas, the government provides an allowance for itinerant teachers and those who teach integrated classes in addition to the bonus for working in remote areas. In addition, the government provides more teachers in remote areas with accommodation and modern facilities. By doing so, the schools in these areas have more talented teachers and better after-school programs.

Providing support for the facilities, educational tools and IT equipment: The educational authority established multi-purpose classrooms in rural areas for students' special activities and these classrooms are used as life-long education centers for all residents. The authority is providing intensive support for small school libraries. In addition, it is trying to expand the provision of computers and the building of an advanced IT infrastructure for education.

Establishing Rural Education Development Council: The Rural Education Development Councils were established under the superintendents of cities and provinces to improve the condition for education and facilitate life-long education for the residents in rural areas.

4. MAJOR ISSUES REGARDING THE POLICY TO DEVELOP EDUCATION IN RURAL AREAS

I have covered several themes regarding the educational policy in rural areas including expanding the opportunity of education, improving educational conditions, securing teachers and merging or closing small schools in rural areas. Based on these themes, I would like to point out the main issues regarding the educational policy for rural areas.

4.1. Whether the special university admission system is effective

There is a growing number of people who suspect whether the special admission system is effective for expanding educational opportunities for students in rural areas. The government provided more opportunities for students in rural villages to go to elementary and secondary schools in the 1990s. Going one step further, the government introduced the special admission system to guarantee students in rural areas a substantial opportunity to go to university. The idea of this system is to guarantee educational opportunity for students in the marginalized areas as well as for the disabled. Although an objection was raised pointing out that the system is against the constitution which stipulates equal educational opportunity for all, the system was institutionalized in 1996. By revising the Higher Education Law Provision 29.2 in 2005, the education authority increased the university admission quota for the students in rural areas from 3% to 4%.

In fact, the quota is not mandatory. Many people point out that the average grades of students admitted by the special system are much lower than those of ordinary students, particularly in the prestigious universities. Nevertheless, the special admission system made a substantial contribution to increasing the university enrollment rate of students in rural villages. Some universities and regions hope that the special admission system can be applied to broader rural areas. There are also pros and cons as to whether urban-rural integrated cities can become the beneficiaries of this system. Some insist that the system causes a side-effect of encouraging students to leave rural areas. Others argue that students in cities abuse the system and move to the rural areas temporarily to get into university.

4.2. Controversy over the polarization of the schools in rural areas

We still have a long way to go to improve educational conditions for the schools in rural areas. While we could not neglect the poor school facilities, it was difficult to make investments in the facilities given that the number of students was plummeting. Against this backdrop, in the 1990s, the government integrated or closed small schools in earnest, and tried differentiated measures to improve educational conditions. The educational authority made huge investments to modernize the school facilities in rural areas although it focused on some merged schools and certain regions. The educational authority established air conditioning and heating facilities, gymnasiums, swimming pools, and advanced IT facilities in the schools of rural areas. Many schools in the regions also run school buses. In the meantime, an alternative model for the rural schools was developed and implemented. As measures to improve the poor educational conditions in rural areas, ‘operating school groups’, ‘nurturing one excellent high school in one Goon (district)’, autonomous schools and specialized schools were introduced.

These measures to improve the educational condition in rural area are controversial. First, some insist that such a policy exacerbates the polarization of the schools in the region. The idea of the ‘operating school group’ is to share human resources, facilities and educational programs.

'Nurturing one excellent school in one Goon' aims at making intensive investment in one school. However, the critics point out that the measures made the students in the rural area move to certain schools leading to a hollowing-out of the schools in smaller districts (Myun).

4.3. Controversy over the identity of the schools in rural areas

One of the issues is what the ideal direction is for the schools in rural areas. A majority of people insist that we should pay attention to the gap in student performance between the rural areas and the cities. Hence, the top priority is to improve student performance. They also insist that the first goal of the educational policy for rural areas is to help the students in the area to enter a university.

A small number of autonomous schools in the rural areas recruit students from all around the nation and run flexible educational programs. Among these schools, the middle schools are trying to provide better educational programs to help more students to go to special purpose high schools (science or foreign language high schools) and the high schools' aim is to let more students go to prestigious universities. Some have positive views on the policy of the autonomous schools. Others, however, insist that the policy is not desirable and the schools should make the most of regional characteristics and values. They also say that the schools in rural areas should provide an education that can benefit not only a small number of students but all of the students. Although, how education respects the values of the rural areas has not been defined, many people believe that education should value agriculture, life and ecology.

4.4. The conditions to secure talented teachers for the schools in rural area

The policy to secure talented teachers for the schools in rural areas stemmed from the enactment of the law on improving education in islands and remote areas. The idea of the policy is to provide a reward for the teachers working in poor conditions and an incentive to encourage teachers to move to less inviting or less popular schools. The government offers the teachers several allowances, accommodation, and additional points for promotion. Among them, providing additional points for promotion is the most powerful measure for securing talented teachers to work for rural schools.

While the government is providing such incentives to overcome the shortage of teachers in rural areas, some insist the incentive system causes critical side effects. The teachers regard the schools in rural areas as a place of temporary work until they can move to a city or become promoted. In particular, the critics insist some teachers abuse the additional point system to get promotion. Therefore, those, who have genuine enthusiasm for working in rural areas are losing the opportunity to work for rural schools.

The educational policy for the rural areas has focused on securing teachers in order to maintain the schools. In the meantime, the educational authority has ignored training and deploying teachers suitable for the schools in rural areas. The teachers in rural areas should be capable of identifying the social and cultural characteristics of the region, understanding the students' way of life and providing an appropriate education for the students. The teachers play a pivotal role in developing the schools in rural areas. Therefore, many people insist that we need a system to secure the teachers who have been properly trained and have passion for the students in rural areas.

4.5. Merits and demerits of the policy on the merging and closing of small schools

Since 1982, the government has implemented the policy of merging and closing small schools in rural areas. The purpose of the policy is to guarantee the students the right to learn and improve economic efficiency. To some extent, it is inevitable to merge and shut down the small schools, where the number of students is plummeting, considering education finance. However, the policy caused some problems (according to a report written by Ministry of Education and Human Resources Development in 2006). First of all, the government lost the public trust due to inconsistent implementation of policy. The government changed its policy several times between merging small schools and supporting them, intervention versus self-regulation, and providing national incentives versus regional incentives. In addition, the mergers and closures of schools were not implemented based on a long-term vision, but on a simple model (decrease in the number of students→ closing the main school → reorganization of school branch → shutting down the branch). The incentive for the merged schools was too small due to the budget limitations and it was usually a one time investment in the school facility, which restrained the rural schools from developing in various ways.

While the government was implementing the policy on merging and closing schools in 1982, the issues was how to address the closed schools. In 2001, the government enacted a special law on stimulating the utilization of the closed school asset. The purpose of the law was to sell or lease out the closed school to be used as a welfare or educational facility in the region. However, in some cases, organizations which did not value the customs of the village bought the school leading to conflict between the residents and the educational administrative authority.

Meanwhile, there was significant opposition to the policy on merging and closing schools. One example is a 'nationwide campaign to revive the small schools in rural areas'. Rural and civic groups severely criticized the government policy. They organized a movement called 'people who protect small schools' among farmers, teachers and parents. Furthermore, they formed 'Emergency Measure Committees to stop merging and closing the small schools in rural areas'. The reasons these groups are against merging and closing the schools are as follows. First, our education and culture are victimized by economic logic. Indeed, the rural school is not only an educational place, but also a spiritual and cultural space. Second, merging and closing the small schools is discrimination against rural regions. Third, it leads more and more people in rural villages leaving for urban areas, devastating the rural areas.

5. A NEW DIRECTION FOR DEVELOPING EDUCATION IN RURAL AREA

I believe we need to search in a new direction for developing education in rural areas. First of all, we need changes regarding the controversial issues. In order to increase the educational opportunity for rural areas, we need to improve the quality of education substantially, and thus guarantee the students a practical opportunity for education and employment. By improving education quality in the rural areas, we can foster talented people and lay a foundation for them to settle in rural areas rather than moving to the city. Instead of catching up with the performance of urban schools, the schools in rural areas should respect and preserve the distinctive value of the rural area. In addition, we should secure better qualified teachers rather than focusing on increasing the number of teachers in rural areas. When we implement the policy on merging and closing small schools in rural villages, we need to reflect the regional characteristics from a long-term perspective.

Second, developing education and improving welfare in rural area should go hand in hand. To this end, the educational welfare model should be developed and implemented in the particular rural area. The educational welfare model should not only focus on improving the educational conditions in schools and student performance, but also help the rural students in terms of livelihood, physical and psychological health, and relations with peers. It should support the individual consistently at every stage of life. Our challenge is to yield a consensus for investing public resources to make this happen.

Third, we need more specified standards suitable for developing education in rural areas. In fact, there are educational gaps between the Eup (a little bigger district than Myun) and the Myun even though they may be in the same rural region. While the Eup is narrowing the gap with the city, the gap between the Myun and the city is widening. Therefore, we should focus on nurturing the schools in the Myun and come up with some measures to narrow the gap.

Fourth, we need to pay attention to the growing demand requiring a shifting of education provision from urban to rural areas. Some rural schools offer temporary or one-time educational programs for students from urban areas. Going further, the schools provide the urban students with an opportunity to move to rural schools and study for more than one semester. The government needs to support the students, who have a home stay and go to school in rural areas, or the families that move to the rural regions.

Fifth, the government should implement a broad range of policies for the education of multi-cultural families in rural areas. It should develop and implement supportive programs for foreign women who have married men in rural areas, and help the children of these families so that they can learn the Korean language and culture in order to better adjust to life in the area. In addition, the educational authority should train the teachers to teach children in such multi-cultural families more effectively.

6. CONCLUSION

Korean rural areas and the schools in these areas are being rapidly devastated and marginalized. Some people have been pessimistic for a long time to the extent that they believe the areas cannot be worse. In addition, the future of the schools in these areas is uncertain due to low fertility rates and an aging population. However, the future of education in the region may be optimistic depending on what philosophy we have for education. Indeed, rural areas have the potential to improve human life. In addition, we can reach a consensus to invest public resources in rural areas because these regions have been hit hard by the government policy to boost free trade and develop industry.

Now it is the time for the government to take a leadership role in finding a new direction for nurturing schools in rural areas. It should minimize the educational disadvantage caused by the differences between residential districts. We need to get away from education's current focus on preparing students for passing entrance exams. Instead, we need education to nurture capable leaders for a knowledge-based society. In order to develop education in rural areas, the government should foster multi-sector cooperation, allot a proper role to the central and the regional government, secure resources, build comprehensive infrastructure for education and enact laws for building the rural village's capability to develop education.

BIBLIOGRAPHY

Ministry of Education (1998). 50 Years of Education. South Korea.

Ministry of Education and Human Resources Development (2004). Understanding our education by looking into the statistics. Government of the Republic of Korea.

Ministry of Agriculture and Forestry (2005). The tasks of the 1st Five year basic plan for improving the quality of living in rural areas. Government of the Republic of Korea.

Ministry of Education and Human Resources Development (2006). The plan to merge and close small schools, and develop proper school size in rural areas. Government of the Republic of Korea.

Im, Youn-Kee, (2006). Features of the rural education policy in Korea and its future direction. *Journal of Educational Administration* 24(4). 27-50.

DEVELOPING GOVERNMENT POLICIES FOR SUCCESSFUL RURAL EDUCATION IN CANADA

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ABSTRACT

A policy of school closure and consolidation dominated rural education and schooling in Canada for most of the 20th century. In the name of reform, thousands of small community schools were improved out of existence. Children of all ages were bussed away from their home communities so as to attain the purported better education only to be had in larger, single graded schools. At the turn of the 21st century there was a realization that the small schools that could be eliminated had been and those that remained were so situated that bussing was not an option. These remote and isolated schools are mostly all-grade schools, rely heavily on combined classrooms and distance education, have fewer than 100 students and have difficulty recruiting and retaining teachers. This paper advocates that governments and educational authorities should accept the reality of these schools and develop educational policies responsive to their unique characteristics. Policy areas discussed include programming, funding, and teacher professional development and distance education. If these schools are to be successful in providing quality education, policy changes are necessary in these areas.

1. INTRODUCTION

It is my great pleasure to be once again in Australia. This is my third visit and I will be returning again in August of this year. You may assume that I rather like the place and its people. I first came to Australia in 2005 while on sabbatical from Memorial University and spent a very productive time at Charles Sturt University in Wagga Wagga working with Colin Boylan and Andrew Wallace among others. I feel at home here in Australia more than I do in any other foreign country. I think it has a lot to do with the people: their open and friendly manner, their enjoyment of a good laugh and a fine appreciation for spiritual refreshments. All qualities one can find in abundance in my part of Canada, Newfoundland and Labrador.

I want to thank the conference committee for having the good judgment to invite me to be a keynote speaker at this first International Symposium for Innovation in Rural Education. I enjoy this kind of presentation because I see it as an opportunity to present and discuss ideas in a more informal manner than one would do in a formal academic paper. I hope I live up to the committee's expectations.

My assigned topic for today's presentation is "Developing Government Policies for Successful Rural Education in Canada." I have also been asked to say a few words about "ICT and its attendant advantages and disadvantages." This is a most appropriate addition because in my part of the world web-based distance learning is perceived as something of a life-saver for rural and remote schools. It is through distance technologies, it is believed, that smaller schools are able to maintain essential programming. However, despite the enormous potential of distance education, there are some important policy changes that need to be made if this mode of learning is to work for every student.

I want to say a few words right at the beginning about the notion of "successful rural education." What do we mean by successful? What criteria should we use to determine the success of rural schools? How should such criteria be determined? Equally important, who would be involved in the determination?

There are some in my particular context for whom the criteria of success would be the closure of all small community schools. Long distance bussing, up to three hours duration, of even the youngest children would be a fair price for them to pay so that they could enjoy the purported benefits of larger schools situated in communities distant from their homes. There are others, and I am one of them, who would see that result as a sign of failure rather than success. I believe we have gone down the wrong road in reforming so many rural small schools out of existence.

There are some who would judge the success of a rural school on the basis of the numbers of young people rural schools enable to "escape" their rural communities through participating in post secondary education. There are others who would insist the criteria should be how well rural education serves those kids who may choose to stay and make a life and a living in their rural community as well as those who may choose to leave.

The criteria selected will reflect the values and aspirations of those doing the selecting. Education policies are about values as much as they are about anything else. I should also add that the notion of successful rural education may be context specific. What may be a successful rural school system in Canada may not be the same as one in Australia, Korea or the US.

2. THE RURAL SCHOOL PROBLEM AND SCHOOL CLOSURE AND CONSOLIDATION

In Canada education and schooling are primarily provincial matters. There is no national system of education or federal department of education. Each province has total control and jurisdiction over its education system. Therefore, education and schooling are somewhat unique in each part of the country.

My home province of Newfoundland and Labrador is Canada's newest province, the second smallest in terms of population and perhaps the most rural. The total population is around 500,000, the majority of which live in rural areas. The largest city, the capital St. John's has a population of around 100,000. Most other towns have less than 5,000 people and the majority considerably less than that.

Newfoundland and Labrador has always been and remains a province of small schools the majority of which are situated in rural areas. Although the number of schools over all has declined from a high of 1200 in the 1960's to less than 300 today in 2008, the scale of schooling remains small. The average enrolment of all schools in the province is only 257 while the average for the 179 rural schools is 163 students. 90 of the smallest of these rural schools are all grade or K-12 schools and are situated in the more remote and isolated regions of the province. Close to 25% of our schools have less than 100 students and 37 of these have less than 50.

For most of the twentieth century educational reformers in North America believed the problem with rural education was the scale of schooling. The schools were too small to provide quality education for rural children in a cost effective manner. The solution to this "problem" was obvious: institute a policy of closure and consolidation and eliminate as many small schools as possible. Rural students of all ages would be transported to distant communities where they

could enjoy the purported educational advantages and opportunities only available in larger schools.

For most of the 20th century educational authorities in Canada (and the US) in the name of educational reform have pursued a consistent and at times ruthless policy of school closure and consolidation. Nowhere was this policy more "successful" than in Newfoundland and Labrador. Since 1966, 900 schools mostly small rural community schools have been closed. Parallel to the closure policy was a bussing policy that saw increasing numbers of students bussed for longer distances to larger schools further and further away from their home communities.

The general situation I have described in Newfoundland and Labrador is similar to most other Canadian provinces. Policies of consolidation, centralization and standardization have been relentlessly implemented.

3. THE CURRENT SITUATION

We are now at a point in my province and elsewhere in Canada where we have closed and consolidated the schools we can. Most of the small rural schools that remain are in remote and isolated rural places where bussing is simply not an option. There is a limit to how far and how long we can expect students to endure riding a school bus. As long as these rural communities continue to exist, educational services will have to be provided to these communities.

These small rural schools share a number of characteristics, which create challenges for the provision of quality education.

Small enrolment

Most of these schools have an enrolment of less than 100 students. Many have as few as 10 to 20 students.

All Grade Schools

The majority of the small schools in remote and isolated places are all-grade, K-12 schools. However, there may be only two or three students at each of the 13 grade levels.

Multi-grading

All of these schools would be multi-graded for grades K-9. Most would have three or more grade levels combined in one classroom.

Multi-level/course teaching at the high school level

In most of these schools high school teachers would be responsible for providing instruction in two or more subjects or courses in the same instructional period.

Heavy reliance on web-based distance education

Most recently, these schools have relied increasingly on web based distance education for providing high school courses. The intent is, as teachers are cut from the system, their place will be taken by computer based distance learning. While this mode of learning works well with highly motivated, independent learners, it is proving to be problematic with the average adolescent who lacks these attributes.

Declining enrolment and difficulties associated with recruiting and especially retaining teachers are also part of the picture when describing the challenges confronting these rural schools. As small as they are, current demographics indicate they will get even smaller. And it is increasingly difficult to recruit and retain teachers in the areas of math, science and foreign language for these schools.

Finally, there is the issue of resource allocation – material and human. Historically, in Canada, policy has dictated that all schools be resourced equally based, primarily, on student enrolment. Educational authorities have maintained that such a policy is fair and equitable. The reality is that such policies clearly discriminate against smaller schools leaving them with less personnel and material resources than they need.

4. POLICY INITIATIVES FOR SUCCESSFUL RURAL EDUCATION

In the first half of this paper I have attempted to provide you with a few historical and contextual notes regarding rural education in Canada with particular reference to Newfoundland and Labrador. I have noted that for most of the 20th century the dominant policy in effect was a persistent attempt to close and consolidate as many small rural schools as possible. Small schools were seen as educationally deficient and it was in the interest of students to travel any distance to a larger school so as to obtain a quality education. Smaller schools were largely ignored as far as supportive policy initiatives were concerned. General policies tended to discriminate against small schools. It was as if they were being punished for being small.

We are now at a point where the policy of closure and consolidation has largely run its course. The small schools that could be reformed out of existence have been closed. There is an acceptance now that the small rural schools that remain will always be there as long as their communities continue to exist. In the remainder of this paper, I am going to outline some policy initiatives that I believe are necessary for these schools to be successful[1].

5. CHANGES IN ATTITUDE AND PERCEPTION

Governments and educational authorities have to change their perception and attitude towards small rural schools. In Newfoundland and Labrador the term "necessarily existent" is used in reference to these schools. Implied here is the notion that the Government regrets the existence of these schools. I think this attitude is problematic and hinders true educational improvement.

The way forward, the path to enable these schools to achieve their educational potential has to start with new attitude that goes beyond acceptance to one that embraces and celebrates small schools as not only viable but also valuable to the communities they serve. This is qualitatively different than the reluctant acceptance their existence as a necessary evil. These schools are important and vital to preserving our rural communities. Assuming that is what we wish to do!

6. CURRICULUM POLICIES

Of all the issues identified by my graduate students, who are mostly experienced rural teachers, the greatest challenge is programming policies. This is especially problematic at the high school level.

[1] The provision of an education that enables rural youth to make a living and a life in a place of their choosing.

School programs and graduation requirements are planned and developed for larger urban schools. Assumptions are made about student enrolment, the number of teachers (with specific qualifications) and resources in these schools. The problem is that none of these assumptions hold true for smaller rural schools. Yet, current policy dictates that even the smallest schools (e.g. all grade schools with just two teachers) have to conform to these programming policies. It is a classic case of forcing a square peg in a round hole and blindly adhering to a one size fits all approach to curriculum planning.

What is particularly irritating to the rural school principals is that they are not provided with any policy guidelines or advice as to how make the provincial program of studies work in their small schools. They are left to their own creative devices. However, they are held accountable for the decisions they do make. This is not an acceptable situation.

I believe an important change that would make rural education more successful would be for educational planners to design a curricular program for small rural schools. Instead of putting the responsibility on rural principals to find ways to make a program designed for larger schools work in smaller schools, have program planners at provincial and state levels design an appropriate program for smaller schools. This program must reflect small school realities. At the very least they need to develop a set of policy guidelines that provide advice and direction for rural principals as how to make the provincial curriculum fit their particular situations.[2]

A second program issue that needs to be addressed at the policy level is finding ways of making the content of the curriculum more relevant to the rural context. Schools need more freedom and flexibility to create courses that reflect the local economy and environment and to adapt course material to take advantage of the resources readily available in the local context. Locally developed courses would increase rural students interest in school and contribute to their ability to make a living and a life in their home communities.

7. RESOURCING POLICIES

In the name of equality, small rural schools have been resourced primarily on the same basis as larger schools – that of student enrolment. Teachers are allocated and instructional resources are provided according to student enrolment. This policy creates severe disadvantages for small rural schools. This situation is exacerbated when schools are experiencing a decline in enrolment as our rural schools are now.

It could be argued that these policies have remained in place as long as they have to act as a form of coercion to force rural communities to agree to close their small schools (an educational scorched earth policy). If education authorities have indeed come to the point where they now accept the reality of small rural schools and acknowledge they will continue to exist, then a new resourcing policy is required. This new policy cannot be linked to student enrolment as has been in previous policies. It has to be linked to program provision.

Sufficient resources both material and human have to be committed to each school to enable that school, regardless of its size, to provide an acceptable level of basic programming for its students including in the case of all grade schools enabling students to meet high school graduation requirements.

[2] Increasingly, small rural schools are relying on web-based distance learning to provide high school courses for their students. This has great potential for making rural schools more successful but there are a number of policy changes are needed. I will address this issue later in this paper.

8. TEACHER EDUCATION

I am not aware of any University or Faculty of Education in Canada that has a pre-service program dedicated to the preparation of rural teachers. A generic approach to teacher education predominates based on the belief that teaching is teaching regardless of the context. What this generally means is that teachers are prepared for large urban schools. Some faculties may offer one or two elective courses that focus on rural issues. Memorial University of Newfoundland, for example, offers an elective course (Education 4911) that focuses on multi-grade and multiage classrooms.

I believe that rural education would be more successful in Canada if Faculties of Education did a better job of preparing teachers for the particular and unique challenges characteristic of small rural schools. This preparation must address the pedagogical and curricular challenges associated with small all-grade schools as well as the challenges inherent in living in remote and isolated places.

One innovation that has been recently implemented at Memorial University is a second field experience that places student teachers in the most remote and isolated schools for a period of two weeks. All pre-service teachers complete a mandatory thirteen-week field placement as part of their undergraduate program. In the final semester of the program students may opt to take part in this additional field experience.[3] The intent of the program is to provide students with the opportunity to live and work in the most isolated areas of the province. This experience should enable them to make more informed decisions as to whether teaching in a small school and living in a remote location is something they could or could not do.[4]

I believe we would improve our efforts at recruiting and especially retaining teachers in rural schools if we did a better job with their initial preparation. Most often new teachers accept positions in small rural schools but have very little if any idea about such schools or how they work. Nor do they know if they would be able to adjust to living in a remote and isolated community.

9. PROFESSIONAL DEVELOPMENT

The continuing professional development of rural teachers is essential in any effort to make rural schools more successful in providing quality education for students. However, there are two concerns that have to be addressed at the level of policy. One is relevance and the other is accessibility.

The issue of relevance concerns the fact that many professional development activities fail to acknowledge and address the unique circumstances of small rural schools. The approach most often taken is to focus on specific grade level curricula, e.g. fourth grade math. Rarely will there be professional development for those teachers who work with two or three grade levels in the same classroom. If multi-grade teachers ask P.D. presenters to suggest how they might implement new curricula in their classrooms quite often they are met with blank stares.

Teachers working in remote and isolated schools also have problems attending professional development activities. Educational authorities often fail to appreciate the travel time required to get from the rural community to the location where the P.D. is occurring. Remote teachers

[3] Students participating in this program have all their expenses covered and receive an honorarium.

[4] Ongoing research on this innovation is demonstrating that the intent of the program is being realized.

often need two or three extra leave and travel days more than their colleagues who work and live close to the P.D. site.

When professional development is being planned it must be a matter of policy that the particular circumstances of rural schools are included in the agenda and the travel needs of remote teachers are considered.

10. WEB-BASED DISTANCE EDUCATION

Increasingly, small rural schools in Newfoundland and Labrador and elsewhere in Canada are relying on web-based distance education to provide their high school students with access to the programs and courses they need to graduate. As enrolment continues to decline and site based teachers are cut from schools the reliance on distance learning will increase.

Distance education has the potential to make the size and location of a rural school irrelevant in terms of its ability to provide students access via the Internet to any program or course they may need or wish to take. However, certain aspects of the existing model must be changed if all students are to have an equal chance of succeeding in this mode of learning.

In its original conception in Newfoundland and Labrador (1987), distance education was intended to provide supplementary programming to small rural schools. The intended cliental were the top academic students in the school who were interested and capable of working in a self-directed and independent way. The first courses offered by distance in the province were in fact advanced placement university equivalent courses.

Since 1992, the province has experienced a dramatic decline in student enrolment. Hardest hit have been small rural schools. As a consequence of this decline increasing numbers of teaching positions have been eliminated from the system. The ability of small rural schools to offer even minimum programs and courses on site has become increasingly problematic. In addition, in recent years it has gotten increasingly difficult to staff the more remote and isolated small schools with specialists in the areas of math, science and foreign language.

The Centre for Distance Learning and Innovation (CDLI) was established (2000) to increase the provision of high school programs and courses to small schools via the Internet. CDLI is charged with the responsibility of providing rural students with the courses that are not available in their schools because of their small size. Each year since 2001 CDLI has increased the number of courses available online. In remote and isolated schools all students must take one or more distance courses in order to graduate.

This is a very significant change in the purpose for CDLI and distance education in the province. Whereas before they were providing a service of choice for an elite and selective group of students, they are now operating as a necessary mode of curriculum delivery for even the most academically challenged and immature adolescents. The significance of this cannot be overestimated: students must master the demands of distance learning or compromise their future life chances.

For those adolescents who possess the necessary attributes[5] to succeed in this virtual environment, CDLI provides them with access to a wide range of courses that they would not otherwise be able to take. For those lacking these attributes, online learning is problematic.

Policy Change Needed

The existing policy of CDLI maintains that students taking distance courses do not need academic support and supervision from school based teachers. They, purportedly, receive all the academic support they need from their online instructors.

However, as the range of students enrolling in distance courses has expanded it has become clear that some students need a great deal more school-based support and supervision than that envisioned in the current CDLI model. Many of these students lack both motivation and self-direction. Left unsupervised they will spend their time chatting with friends on MSN or Facebook, downloading music and playing computer games rather than attending to their online lessons. Many others are lacking in academic ability and find it very difficult to complete their work without teacher support. While there is academic tutoring available on-line many lack the confidence to initiate contact with their e-teachers.

The few teachers working on site in the remote and isolated schools do as much as they can for these students but their school-based workload is intense. In some situations teachers have to take time away from their existing teaching duties in order to assist an online student. This means they have to interrupt and disrupt their school based classes to provide the needed assistance. This is unfair to the school based students. In other situations the help has to be provided at recess, lunch time or after school. Rural teachers have to volunteer their precious free time to work with online students. Neither of these situations is pedagogically sound or acceptable. Distance students cannot be dependent on the volunteerism and good will of overworked rural teachers. Nor can their educational needs be defined as an add-on for a teacher who already has a full and demanding teaching load.

A modification to the existing CDLI model is appropriate and needed. There especially has to be some provision for increased support and supervision in the school for students taking distance courses. There is a need for someone who would have dedicated time away from other duties and responsibilities to work with a school's CDLI students. This support person would not be primarily academic. CDLI has excellent teachers who make themselves, for the most part, readily available to their students. The academic expertise is in place. The real need is for a person who would monitor and supervise students while they engage in their online courses. This person would act as a liaison between the student, the online teacher, the parents and the school's personnel. They would help students keep track of their assignments and tests, assist with technical problems and facilitate contact between students and their online instructor.

This change in policy would ameliorate many of the serious concerns raised by rural teachers, parents and students. There is no question that more and more students are going to have to rely on distance education provided by CDLI to graduate from high school. If students are going to graduate with an academic qualification, depending on the size of the school they attend, most will have to take a significant portion of their program online. If the right supports are in place

[5] A successful online learner needs to be disciplined and have the initiative to study in a flexible environment without the constraints and supervision of a traditional classroom. Important attributes include: the ability to be organized, motivated and self-directed. Although they can study and attend class at their leisure, online learners typically do not procrastinate. They set a pace that enables them to comfortably get their work done. They are usually very committed to their online high school classes.

more students will avail of the academic programs and more importantly have a better chance to succeed.

11. CONCLUSION

For most of the 20th century a policy of closure and consolidation dominated educational reform efforts. Small schools were judged to be educationally ineffective and inefficient. The way to improve the quality of education in rural areas was to reform as many small schools out of existence as possible.

In the first decade of the 21st century governments and educational authorities have begun to accept the fact that the small rural schools that remain in remote and isolated places cannot be closed because it is not feasible to transport students from their home communities.

The challenge for educational authorities at this point in time is developing policies that would provide these schools with the support they need to be successful. In this paper I have suggested that policy changes are needed in the areas of programming, resource provision, teacher education, professional development and distance learning.

I have also suggested that an important first step is that governments and educational authorities must go beyond the mere acceptance of the remaining small schools as a necessary if regrettable reality. They must embrace and celebrate these small schools as not only viable but as valuable resources for the sustainability and development of the communities they serve.

SELECT BIBLIOGRAPHY

Mulcahy, D. (2007) Current issues in rural education in Newfoundland and Labrador. *Education in Rural Australia, 17*(1), 12-21

Mulcahy, D. & Corbett, M. (2006) Education on a human scale: Small schools in the modern context. A report prepared for the Municipality of Cumberland County, Nova Scotia, Canada. Research Report 061 – Acadia Centre for Rural Education. [Available online at Rural School and Community Trust.

Mulcahy, D. & Boylan, C. (2006) Making the transition to multiage education. *Free to Learn 2*(1), 5-9.

Mulcahy, D. (2006) Rural issues in education in Australia and Canada. Society for the Preservation of Rural Education (SPERA) Annual Conference. Hobart, Tasmania, Australia. [July, 2006]

Mulcahy, D. (2006) Rural and Remote Education in Newfoundland and Labrador. The Priority Country Areas Program State Conference, sponsored by the Department of Education and Training, Government of Western Australia. Perth, Western Australia. [November, 2006].

Barbour, M. K. & Mulcahy, D. (2006). An inquiry into retention and achievement differences in campus based and web based AP courses. *Rural Educator, 27*(3), 8-12.

Mulcahy, D (2008) The Warren Royal Commission on Education: Setting the agenda for rural educational reform? Symposium 2008: Post Confederation Educational Reform: From Rhetoric to Reality. St. John's, NL [May, 2008]

Mulcahy, D. (2008) Student Performance in virtual schooling: Looking beyond the numbers. Paper presented at the annual meeting of the American Educational Research Association, New York, NY. Co-presenter Mike Barbour, University of Georgia.

Mulcahy, D. (2007) Multi-grade classrooms and multi-age pedagogy: Connecting the dots for rural educators. Paper presented at the SPERA Conference Perth, Western Australia. (August)

Mulcahy, D. (2007). How are they doing? Examining student achievement in virtual schooling. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL. Co-presenter: Mike Barbour, University of Georgia.

Mulcahy, D. (2006). An inquiry into achievement differences in traditional and virtual high school courses" (Paper presentation) American Educational Research Association, San Francisco, CA. Co-presenter: Mike Barbour, University of Georgia

Mulcahy, D. (2005) *The Rural Education Research Agenda.* National Rural Education Association. Tucson, AZ.

Mulcahy, D. (2005) Comparative performance differences between classroom and web-based AP Courses in small rural schools. AERA San Francisco.

Mulcahy, D. (1999) Critical perspectives on rural education reform. *The Morning Watch (26)*3&4. http://www.mun.ca/educ/faculty/mwatch/win99.html

LESSONS LEARNT: IMPLICATIONS OF FOUR LARGE-SCALE SIMERR PROJECTS FOR RURAL EDUCATION IN AUSTRALIA

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ABSTRACT

The quality of learning outcomes should not be dependent on where a person lives. In Australia, students in rural and regional areas perform less well on international and state/territory or federal tests than their peers in metropolitan areas. This fact underscores a serious challenge for education policy and practice in Australia.

Recommendations from the SiMERR National Summit and the SiMERR National Survey point to the importance of three factors: (i) an integrated approach to tackling education issues in rural Australia; (ii) an inclusive agenda including areas outside of education such as rural and regional development, infrastructure, health and social services; and (iii) a coordinated, collaboratively designed and research-supported package of programs to address the needs of rural teachers and students, rather than a collection of separate initiatives. Without these three agendas working together, true sustainability of any improvements will not be achieved.

Australia has not managed to bring these agendas together as yet. However, in 2004 the federal government did provide substantial funds to establish a research group involving academics from each state and territory to begin to address rural issues in a more holistic and integrated form. Overall, members of SiMERR Australia have undertaken over 140 projects. The results of this initiative are described in this paper, as are three large-scale projects undertaken. These projects, while very different, complement one another and provide a clearer picture of ways to meet different policy objectives.

1. BACKGROUND

There have been numerous Australian reports (e.g., Alloway, Gilbert, Gilbert, & Muspratt, 2004; Arnold, 2001; Vinson, 2002) concerning the plight of education in rural and regional Australia. These reports paint a realistic and challenging picture for rural communities of low student learning outcomes, difficulties in attracting and retaining teachers, and the absence of regular professional development activities that address the needs of rural teachers.

Clearly the factors identified above are not independent, but the one of greatest concern is the inequity identified in the learning outcomes of rural students compared to those of students in metropolitan areas (Panizzon & Pegg, 2007). Recent national data (MCEETYA, 2007) and International trend data from such sources as the Trends in Mathematics and Science Study (TIMSS) (Zammit, Routitsky, & Greenwood, 2002) and the Programme for International Student Assessment (PISA) (Thomson, Cresswell, & De Bortoli, 2004) continue to show the extent of the differences in performances between rural and metropolitan areas, and how these differences increase the further students live from large metropolitan areas.

We are approaching a critical time for rural and regional Australia. In a time when science, technology and mathematics are having a greater influence on people's everyday lives, and underpin more overtly a nation's prosperity, it appears that rural and regional communities are being marginalised. Nothing can be more destructive for rural communities than for their children to consistently under-perform in school through reduced learning opportunities. As a nation, it is critical that those conditions seen as limiting the learning outcomes of students in rural Australia to be identified and addressed so that all Australian students have the opportunity to achieve their academic potential.

The following section provides a context to this paper by considering issues that arose at the SiMERR National Summit where leading professionals in education across Australia were given access, and asked to respond, to the initial analysis of the SiMERR National Survey data.

2. CONTEXT

The SiMERR National Summit was a gathering of over 150 academics, leaders of professional organizations, and senior representatives of Federal, State and Territory education jurisdictions (and in particular those concerned with science, ICT and mathematics) concerned about the inequities that exist in the learning outcomes and opportunities for students who live in rural and regional Australia. The Summit was held in November 2005 at the Australian Science and Mathematics School; a government secondary school on the campus of Flinders University, Adelaide. At the heart of the Summit was the question: Why are the issues currently facing rural and regional communities in education so intractable?

During the keynote presentations and in the workshop sessions, the discussion focused on the inequities in the education provision for, and outcomes of, rural students compared to their metropolitan peers. There were two notions underpinning discussions. First, there should not be such an educational divide between metropolitan and non-metropolitan students/teachers/ schools/resourcing, and second, education issues facing rural and regional communities are complex and pervasive. Issues arising included the following:

- Education authorities across Australia should be deeply concerned about the disparities in achievement between rural and metropolitan students in science, ICT and mathematics.
- Rural schools face barriers to providing quality education, such as distances to major centres, problematic staffing and difficulties establishing and maintaining infrastructure.
- Rural education is interlinked with other aspects of rural communities, such as fluctuating populations, economic influences, seasonal conditions and climate.
- The need for students in rural and remote areas to have access to quality education services within a reasonable distance from the family home. (Pegg, 2007)

In the discussions there was recognition that the issues facing rural Australia are complex and deep seated. There was also acknowledgement that there are pockets of highly successful practice in rural Australia and that perhaps there are lessons to be learned through an analysis of these practices. However, two themes recurred in the workshops and discussions. The first concerned the importance of addressing underlying issues in an integrated way. The second theme accepted that due to the inevitable focus on educational solutions many of the actions initiated could not by their nature begin to address key fundamental underpinning issues.

In the first case, issues were identified with rural and regional concerns being considered in isolation from one another. Such issues included teacher retention in rural areas, small cohorts of rural students accessing post-compulsory schooling and tertiary education, and inequities in resourcing. The problem with this approach was not simply the importance of these individual issues, which have been identified as significant and clearly require action. The important point identified by summit participants was that the issues described above need to be part of a more integrated and better-coordinated package underpinned by common education policy directions if they are to achieve sustainable objectives.

The second case focused on the need for a broader renewal agenda for rural communities than education alone. While accepting that education could be one catalyst for change, unless broader socio-economic and social issues are incorporated into action plans then any successes will be illusory. An educational response to rural problems in education, even if underpinned by educational policy, will be unable to sustain any gains in the long-term. Broader issues such as those associated with rural and regional development, rural and regional infrastructure, rural and regional health, and social services are all related to and impact on rural education. Hence extending the ideas of theme one, not only is there a need for a coherent and coordinated approach across education issues, this must be matched by a similarly coordinated approach across other areas that impact on rural communities.

Consequently, recommendations from earlier reports on educational disadvantage were seen as a useful resource for providing the elements upon which a more comprehensive and encompassing strategy could be planned. Implicit in these themes is that a coordinated response across a full gamut of issues influencing rural and regional communities is the only viable long-term way to address rural and regional education issues.

This theme also emerged from the SiMERR National Survey (Lyons, Cooksey, Panizzon, Parnell, & Pegg, 2006, p.172), and resulted in the Principal recommendation of the report:

> It is recommended that a whole-of-government approach to addressing the issues of rural and regional school education be developed and implemented in the form of a National Rural School Education Strategy. The aim of the strategy would be:
>
> - To map a coordinated approach across all government and non-government education jurisdictions to addressing the disparities in rural and regional school education.
>
> - To foster the development of strategic partnerships between stakeholders involved in rural and regional education
>
> - To deliver a coordinated, collaboratively designed and research-supported package of programs to address the needs of rural teachers and students, rather than a collection of separate initiatives.

It is this last point that is the focus of the remainder of this paper. It is an example of a significant national attempt to begin to address the integration of research on rural issues. To commence such an approach, the Australian federal government provided establishment funding to create the National Centre for Science, ICT and Mathematics Education for Rural and Regional (SiMERR) Australia at the University of New England in July 2004. In turn, the SiMERR National Centre created hubs at universities in each state and territory to create SiMERR Australia, a cohort of researchers and educators committed to identifying and addressing concerns facing rural Australia in these three subject areas.

The next section briefly outlines the philosophy behind the creation and work of the SiMERR National Centre as well as some of its achievements over the past four years.

3. THE SiMERR NATIONAL CENTRE

SiMERR Australia has embarked on a challenging journey. It has sought to influence positively the educational outcomes of rural students whose educational opportunities do not match those of their metropolitan counterparts, and to reduce the professional isolation of teachers. These two goals have been pursued through targeted research programs to inform education policy, teaching practice and pedagogy, professional development programs, and teaching and learning interventions for students.

The vision of SiMERR Australia is to work with rural and regional communities to achieve improved educational outcomes for all students in the areas of science, ICT and mathematics so that:

- Parents can send their children to rural or regional schools knowing they will experience equal opportunities for a quality education.
- Students attending rural or regional schools can realise their academic potential in science, ICT and mathematics.
- Teachers can work in rural or regional schools and be professionally connected and supported.

SiMERR targets two specific areas of research and teacher professional learning. Its programs identify and address important educational issues of

(i) specific concern to education in rural and regional Australia, and

(ii) national concern to education across Australia but ensuring rural and regional voices are strongly represented.

Overlaying these research and professional learning areas, SiMERR has a dual focus that complements two major federal policy areas in Australia. First and foremost, is the underperformance of rural students compared to those students studying in metropolitan areas. Second, is the importance to Australia of maximising high levels of teaching competence and student learning outcomes in the critical subject areas of science, ICT and mathematics.

SiMERR Australia's membership of approximately 40 academics, supported by administrative and research staff, and colleagues in educational and rural organizations, have undertaken their work with great energy, initiative and passion. Schools, teachers and students have enthusiastically supported these endeavours by participating in professional development programs, surveys, and teaching and learning interventions. Without this cooperation little progress would have been made in improving education outcomes.

The SiMERR National Centre has now been in operation for over four years. In this time the academic staff of the National Centre and the State and Territory Hubs have been involved in over 140 projects. The implication of this work has meant that the initial financial outlay by the federal government of approximately $5 million as been supplemented by an additional $14.9 million cash and in-kind support for SiMERR's activities.

A broad range of rural education issues are being addressed through SiMERR Australia projects, including:

- Addressing gaps in student achievement;
- Developing models of professional development;
- Enhancing learning experiences and opportunities for geographically isolated students;
- Developing an improved understanding of student learning in different contexts;
- Gaining an insight into different perspectives of student learning – indigenous, special needs and under-performing students;
- Adjusting pedagogical approaches;
- Improving student learning, motivation and retention;
- Informing contemporary educational policies and practices;
- Facilitating collaborative teaching and learning;
- Investigating factors influencing the retention of teachers in rural and remote schools; and
- Using rurality as a resource.

It is a matter of record that as a result of SiMERR Australia's research and professional learning activities:

- rural issues in education have a stronger national profile and higher media recognition especially via radio and press;
- national professional teaching associations have been supported to provide targeted professional support for teachers in rural locations;
- a large number of research grants ($ millions) have been awarded to SiMERR Hubs to support rural schools, teachers and students;
- state Government legislation in NSW related to validating teacher professional teaching standards across four career stages has been passed;
- recommendations have been made to federal governments about addressing inequities in rural students learning outcomes as a result of the SiMERR National Survey;
- a new state-based diagnostic test of Year 8 students for science in NSW has been established;
- the federal government is considering ways to encourage more senior secondary students to undertake high-level mathematics;
- the characteristics of Faculty Departments achieving outstanding educational student learning outcomes across the student ability spectrum have been identified and published;
- there has been considerable, sustained improvement in the literacy and numeracy of many rural students who had previously performed below national benchmarks;
- the federal government is considering the recommendations of a three-volume report on the use of stakeholder partnerships in embedding ICT in education; and
- a National Summer School program for Australia's most experienced mathematics and science teachers was designed and implemented in a way that addressed rural and regional needs.

The next three sections consider, respectively, three large-scale research investigations undertaken by the SiMERR National Centre. Each of the research activities is different in intent and design but each provides complementary evidence about what can be achieved in rural areas under an integrated policy approach. There are obvious benefits of such approaches to improve rural education and they offer a vision of what can be done to provide a more equitable environment for rural students and teachers at a number of levels.

The first section reports on characteristics of Faculties achieving outstanding student outcomes across the ability spectrum. The second investigates the contribution of a state-wide diagnostic science test to addressing professional isolation among rural teachers. The third documents the experiences of an intervention program for middle-school children and its effects on student achievement and instructor professional growth.

4. AN EXCEPTIONAL SCHOOLING OUTCOMES PROJECT (ÆSOP)

The first project's working title is An Exceptional Schooling Outcomes Project (ÆSOP). The research was co-funded by the Australian Research Council and the NSW Department of Education (DET). The focus of this research was on within-school groups or teams of teachers working in New South Wales (NSW) government schools. These groupings of teachers were in the form of subject departments, special programs or initiatives.

In the first year, the project team used NSW DET extensive qualitative and quantitative databases to assist with the identification of the special educational sites. However, the team also accessed the large body of information on this issue held by people working in schools as well as significant stakeholder groups. The process of identifying these within school groups or teams of teachers was undertaken by triangulating advice/evidence from a number of sources over eight months.

To be part of the sample 'sites', schools had to demonstrate that in the past four years of student cohorts they had either scored consistently high on value-added measures or demonstrated consistent improvement on the same scores. Importantly, sites had to demonstrate their ability to 'value add' for students in low, middle and high achievement bands. Sites were selected to cover as wide a socio-economic and geographical cross-section of schools in NSW as possible.

As a result, the ÆSOP team identified 50 sites in which students were achieving exceptional outcomes. The sample of sites was restricted to 50 because of the purposes of the research. The sites were to cover a variety of educational areas (see The Adelaide Declaration on National Goals for Schooling in the Twenty-first Century). In particular, the focus areas were those which:

- develop fully the talents and capacities of all students;
- develop high "knowledge, skills and understanding" in terms of curriculum; and
- encourage a "socially just" society. The sites are drawn from across a range of socioeconomic and geographic contexts.

In the second and third year of the study, sites were each visited for a week and studied in depth to identify principles, policies and practices that are most conducive to helping students achieve their potential. In the fourth year, this information was synthesised and evaluated leading to the preparation of professional development publications (see for example, Pegg, Lynch, & Panizzon, 2007) that enabled the research finding to be applied more broadly to Years 7-10 schooling. (Seven books were written to explore the reasons for outstanding educational

outcomes within public secondary schools in the areas of: English; Mathematics; Science; ESL and Literacy; Equity; Student Welfare; and Leadership.)

The research of ÆSOP was different to what had been traditional practice in NSW. There is a considerable body of research identifying the roles of individual teachers and school principals in helping students to achieve outstanding learning outcomes. The ÆSOP Project, on the other hand, represents the first large-scale attempt in Australian education to focus specifically on the roles played by subject departments and other within-school groupings of teachers.

This idea of ÆSOP is intuitively appealing: How is that certain groups of teachers within a school can achieve exceptional results, that are better than the results obtained by other groups of teachers within the same school, given the executive team of the school, the student cohort, and parent base are the same for all teacher groups? Secondly, if reasons can be found are these characteristics similar across different schools and different subject areas?

ÆSOP was initiated by asking three questions:

- How and where can we identify junior secondary schooling that is really 'humming', i.e., in which outstanding educational outcomes are being achieved?
- How can we identify the simple or complex reasons why this occurs in these schools?
- What transferable value can be subsequently adopted by, or adapted to, junior secondary education generally, allowing for contextual variables, through professional development of school personnel?

The results of the research show that in faculties achieving outstanding student outcomes you will find:

- a strong sense of the faculty as a professional team;
- staff highly qualified in their subject areas and with high expectations of their students;
- experienced staff with deep pedagogical knowledge;
- solid, well structured and teacher-based lessons;
- lessons that maximise "time on task";
- the use of testing and assessment as a catalyst for teacher cohesion;
- a clear mission of high expectations for students supported by parents and students as well as faculty members; and
- teachers who care for students as learners and individuals.

What are the implications of this work for rural schools?

- Teams of teachers should be encouraged both within schools and across schools to build a supportive team profile.
- Experienced teachers need to be encouraged to work in rural schools and remain in those schools for up to five years.
- Communities must value teachers as a significant resource for their community and work with them in supportive ways
- Teachers must have high expectations of students even though their might not be an established academic philosophy in the school

5. ESSENTIAL SECONDARY SCIENCE ASSESSMENT (ESSA)

The Essential Secondary Science Assessment (ESSA) is designed as a diagnostic tool to obtain information for teachers, students and parents about the level of achievement and the needs of individual students in science (Panizzon, Arthur, & Pegg, 2006). The SiMERR National Centre involvement came about because of previous work by the former SiMERR Deputy Director Associate Professor Debra Panizzon and the author on a federally funded Australian Research Council grant titled: Assessment practices: Empowering mathematics and science teachers in rural areas to improve student learning and curriculum implementation.

The theoretical framework for this research (Pegg, 2003) and the experiences gained in marking extended response answers in science was used by the NSW DET when they established the pilot program of the test back in 2005. In particular, the NSW DET used the research work on the science learning framework, how to generate appropriate items for the tests, and then how to mark the extended question component most accurately.

After two years of trialling with several thousand students, ESSA was made compulsory in 2007 for students in Year 8 who attend government schools in NSW. Catholic and private schools can also access the examination. ESSA relates directly to the state science syllabus for Years 7-10. The results are therefore applicable and relevant to the topics being taught by teachers in their classrooms.

The test consists of a 16-page colour stimulus magazine and a 20-page booklet containing 75 short answer questions and three extended response tasks. The short answers are electronically scanned while specially trained science teachers mark the extended answers. Student responses are scanned in colour into a central computer in Sydney and become available for marking on computers in designated areas. Students are given a score based on the depth and quality of their knowledge and understanding.

In 2007, the test was undertaken by over 60 000 students and the extended response questions were marked by over 150 teachers in Sydney. In addition to the marking undertaken in Sydney, 2008 was the first time that country teachers were invited to assess ESSA scripts, based at work stations in the rural areas of Wagga, Bathurst and Armidale. The implications of this were that rural teachers were able to gain valuable experience in marking a state-wide test without having to travel to, or live in, Sydney.

One teacher from a small rural school who took part in the marking in Armidale reported to the media that "Being in a regional area you sometimes feel you may miss out on certain opportunities, so this experience is fantastic. I can see for myself how the marking process works, and then share my new knowledge with my fellow teachers back at school."

What are the implications of this work for rural schools?

- ESSA provides teachers with information about how their students are performing in relation to other students/schools.
- ESSA on-line marking and rural marking centres allows rural teachers to achieve extensive professional development previously only available to metropolitan teachers or those prepared to take time from their school.

6. *QUICKSMART* INTERVENTION PROGRAM FOR LOW-ACHIEVING STUDENTS IN THE MIDDLE YEARS

QuickSmart is an example of an evolutionary student intervention program of research that is having a strong impact on the learning outcomes of low-achieving students (Pegg & Graham, 2007). The research program associated with *QuickSmart* is possibly unique in Australia in offering a programmatic intervention conducted in Australian schools. *QuickSmart* targets low-achieving middle-school students' performance in basic mathematics/numeracy (Graham, Bellert, & Pegg, 2007) and literacy (Graham, Pegg, & Alder, 2007). This intervention has accrued substantial evidence regarding its value and applicability at scale.

QuickSmart is a theory-based educational intervention for middle-school students, specifically, for those in Years 5, 6, 7 and 8 (i.e., students aged between about ten and 14 years). This program was designed to enhance students' fluency in either literacy (reading and comprehension) or numeracy by improving their information retrieval times. Individually designed intervention programs are developed and implemented as part of *QuickSmart* in order to strengthen students' problematic skills, e.g., letter naming, word naming, comprehension, recall of number facts, and basic computation. The program is intensive and requires students to work with an adult instructor in pairs for three 30-minute lessons each week for about 30 weeks.

The *QuickSmart* assessment and intervention approach is an innovative instructional method informed by rigorous research findings (e.g., Baker, Gersten, & Lee, 2003; McMaster, Fuchs, Fuchs, & Compton, 2005; Royer, Tronsky, & Chan, 1999). Underpinning the program is the establishment of a motivational learning environment, which places an emphasis on fluency, automatic recall of basic skill information, strategy use and timed practice. The aim of the program is to improve students' information retrieval times to levels that free working-memory capacity from an excessive focus on mundane or routine tasks. In this way, students can become better resourced to undertake higher-order mental processing, and to develop age-appropriate literacy and numeracy skills.

A critical aspect of the implementation of *QuickSmart* over the last eight years has been the attention paid to the ongoing intensive evaluation of the program. This has included gathering assessment information from comparison groups of average-achieving students drawn from the same schools as low-achieving *QuickSmart* students. This research design helps quantify ways that *QuickSmart* narrows the achievement gap for low-achieving students and serves to isolate any effects attributable to the instructional program.

Independent (state-wide or standardised tests) assessment results gathered from *QuickSmart* and comparison students have also provided rich data sets related to student growth that complement computer-based data collected on students' speed and accuracy on basic skills. Interviews and surveys of students, parents, teachers, and Principals have also yielded consistently positive qualitative data.

This strong evidence base confirms the success of *QuickSmart* from a range of perspectives. On the basis of extensive quantitative and qualitative data, it is clear that students, both Indigenous and non-Indigenous, have made substantial academic improvement over the course of the *QuickSmart* Program.

Overall the aim is for classroom teachers, special needs support teachers and teacher aides (referred to below by the generic term 'teachers') to learn how to work with and significantly improve the numeracy outcomes of persistently underachieving students in the middle years of

schooling. The students to be targeted are primarily drawn from those students in the bottom 25% of the Numeracy cohort, i.e., those students who are below, at, or just above benchmark.

QuickSmart also offers teacher professional learning that is relevant and systematic involving an intensive series of professional inputs built around a program of intervention. The professional learning program accompanying *QuickSmart* is focused on supporting 'teachers' to understand and provide:

- effective instruction that maximises student on-task time, and provides learning scaffolds to ensure students experience improvement and success;
- focused, fun, and successful practice that is integral to every lesson and involves guided and independent timed practice activities;
- strategy instruction and concept development;
- confidence to their students by encouraging a 'can do' attitude;
- appropriate teacher and peer modelling; and
- motivational academic activities that are used as opportunities for modelling and to develop fluency.

As a consequence of the project and professional development experiences, 'teachers' learn to:

- use time as a dimension of learning and practice;
- incorporate concepts of automaticity (Quick) and accuracy (Smart) in their teaching;
- structure learning activities to help encourage success;
- address individual student needs in their planning over an extended period;
- assess and monitor student needs unobtrusively in their teaching programs;
- create a highly motivational learning environment for students;
- integrate assessment tasks into each lesson with a non-competitive focus on individual improvement; and
- design and develop activities that improve students' information processing abilities by freeing up working memory.

Also teachers come to experience:

- how automaticity requires conceptual understanding and efficient, effective strategy use; and
- how assessment provides formative information relevant to the progress and design of each individual's program.

What are the implications of this work for rural schools?

- In areas of high teacher turn over and difficult to staff schools teacher para-professionals can achieve outstanding results in supporting learning growth for low-achieving students.
- Second-chance programs that are well resourced, have a strong theoretical basis, and continue for a substantial period of time can have a major impact students learning outcomes and the vision of themselves as learners.

- Professional recognition is needed for para-professional in Australia who in rural communities often become over time the constants within their communities and school.

7. CONCLUSIONS

Concerns about the resourcing of rural schools - including the attraction and retention of quality teachers – are apparent in many countries. Nevertheless, the underperformance of rural students in comparison with their metropolitan peers is a critical issue for Australian education. Australia can ill afford 30% of its student base to be under-performing in education, especially in such nation-building subjects as science, technology and mathematics.

Ways to address this issue are not straightforward. Despite numerous efforts by state and federal authorities, data from many reports in Australia over a long period show little change. This finding points to the fact that the issues concerning rural education are complex and deep-seated. Work undertaken by SiMERR suggests that the apparent intractability of the challenges in rural education is due to the tendency to consider them in isolation. Without a more integrated approach we are destined to continue failing our rural schools.

As suggested in the SiMERR National Survey, if sustainable improvements are to be made then attempts to address inequities in education need to address a more coherent set of policy initiatives. They also need to encompass broader social issues – rural and regional development, infrastructure, health and social services. Finally, the research endeavours that underpin this work needs also to be coordinated and interrelated rather a collection of separate initiatives. This has not been achieved in Australia. Without a coherent and coordinated approach across these diverse areas we will not be able to address rural and regional education concerns in a sustainable way.

However, it is possible that a start has been made. SiMERR Australia is one policy initiative that has attempted to move along this path. Its establishment is the first attempt in Australia to create a coordinated research approach focused on rural issues and designed to support rural students and teachers – but not to the exclusion of students and teachers in metropolitan areas. With federal government funds to underpin its progress, the researchers associated with SiMERR have managed to carry out over 140 projects in the past four years bringing nearly an additional $15 million to support rural research initiatives under a broad policy platform. Much has been learned from this work, and while not perfect, genuine improvements have been documented. With four years experience behind it, SiMERR Australia is well equipped, highly focused and keenly motivated to continue working for rural schools.

REFERENCES

Alloway, N., Gilbert, P., Gilbert, R., & Muspratt, S. (2004). Factors impacting on student aspirations and expectations in regional Australia. Canberra: Department of Education, science and Training.

Arnold, P. (2001). Review of contemporary issues for rural schools. Education in Rural Australia, 11 (1), 30–42.

Baker, S., Gersten, R., & Lee, D.S. (2002). A synthesis of empirical research on teaching mathematics to low-achieving students. The Elementary School Journal, 103 (1), 51 – 73.

Graham, L., Bellert, A. & Pegg, J. (2007). Supporting Students in the Middle School Years with Learning Difficulties in Mathematics: Research into Classroom Practice, Australasian Journal of Special Education, 31 (2), 171-182.

Graham, L., Pegg, J., & Alder, L. (2007). Enhancing secondary school students' literacy performance through a basic skills intervention, Australian Journal of Language and Literacy, 30 (3), 221-234. Invited article.

Lyons, T., Cooksey, R., Panizzon, D., Parnell, A., & Pegg, J. (2006). The SiMERR National Survey. Prepared for the Department of Education, Science and Training. ISBN: 1 86389 997 9. Printing was funded by DEST and printed through McMillan Print, Canberra.

MCEETYA (2007). National report on schooling in Australia: National benchmark results for reading, writing, and numeracy Years 3, 5 and 7 for 2005. Reading Online, http://www.mceetya.edu.au/mceetya/anr/

McMaster, K.L., Fuchs, D., Fuchs, L.S., & Compton, D.L. (2005). Responding to nonresponders: An experimental field trial of identification and intervention methods. Exceptional Children. 71 (4), 445-463.

Panizzon, D. and Pegg, J. 2007. Chasms in Student Achievement: exploring the rural-metropolitan divide. Education in Rural Australia, 17 (2), pp. 3–20.

Panizzon, D., Arthur, D., & Pegg, J. (2006). ESSA: Developing and scoping a test to explore scientific literacy and achievement in NSW. The Journal of the Australian Science Teachers Association. 52 (4), Summer, pp. 22–27.

Pegg, J. 2003. Assessment in mathematics: A development approach. In J. M. Royer (Ed.), Mathematical Cognition. Greenwich, Connecticut: Information Age Publishing, pp. 174-260

Pegg, J. & Graham, L. (2007). Addressing The Needs Of Low-Achieving Mathematics Students: Helping Students 'Trust Their Heads'. Keynote. K Milton, H. Reeves and T. Spencer 2007. Proceedings of the 21st biennial conference of the Australian Association of Mathematics Teachers Inc. The Australian Association of Mathematics Teachers Inc, ISBN: 978-1-875900-63-3.

Pegg, J. (2007). Keynote address 'Developing a National Holistic Approach to Addressing Issues in Rural and Regional School Education Society for the Provision of Education in Rural Australia's (SPERA) 23rd National Conference, August 2007, pp.2-14.

Pegg, J., Lynch, T. and Panizzon. (2007)å. Exceptional Outcomes in Mathematics Education. Post Pressed, Teneriffe. ISBN 8791921214134 (pbk).

Royer, J.M., Tronsky, L.N., & Chan, Y. (1999). Math-fact retrieval as the cognitive mechanism underlying gender differences in math test performance. Contemporary Educational Psychology, 24, 181-266.

Thomson, S., Cresswell, J., & De Bortoli, L. (2004). Facing the future: A focus on mathematical literacy among Australian 15-year-old students in PISA. Camberwell, ACT: Australian Council for Educational Research.

Vinson, A. (2002). Inquiry into public education in New South Wales Second Report September 2002. Reading Online, www.pub-edinquiry.org/reports/final_reports/03/

Zammit, S., Routitsky, A., & Greenwood, L. (2002). Mathematics and science achievement of junior secondary school students in Australia. Melbourne: Australian Council for Educational Research

THE IMPACT OF GLOBALISATION ON SMALL COMMUNITIES AND SMALL SCHOOLS IN EUROPE

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ABSTRACT

The concern of this presentation is to discuss the impact of globalisation processes on rural communities and rural schools. Although the argumentation draws primarily on experiences from the Scandinavian countries Sweden and Norway, it is supported by reference to empirical material from other European countries. Taken to the extreme, it is pointed out that small and remote rural communities may not have a future at all if the globalised market economy and an urban based global mass culture are to prevail unchallenged. Still, the declared political will of both Sweden and Norway is to keep also the sparsely populated areas populated. Education is seen as one policy area with a potential to counteract these negative trends if the applied curriculum makes room for local knowledge and themes, active learning approaches and, possibly, pupil enterprises. For education to play such a role the small and remote communities must have their own school having reasonable working conditions. A Norwegian survey demonstrates that these conditions are seriously threatened in circumstances of decentralised public management applying market economic principles for public services. With tight local budgets local level centralisation becomes a necessary choice causing both threats of, and actual closure of schools.

Keywords: ***Globalisation, Rural development, Rural depopulation, Rural education, Decentralisation, Public spending, Entrepreneurship, School closures, Teaching under threat of closure.***

1. INTRODUCTION

First I should like to express my thanks for having been invited to hold this keynote address. Rural education and rural development and decline have been at the core of my professional interest since I left teaching in small rural primary schools in the 1960s. To address research colleagues in a setting like this, therefore, is indeed both challenging and stimulating, though, deplorably, I am unable to be physically with you during the conference.

My presentation draws in particular on three recent works. Most important is a survey of the education provision in sparsely populated areas of Sweden and Norway which Annika Andræ Thelin and myself completed by the end of 2005 (Solstad &Thelin 2006). Secondly, with the British researcher Alan Sigsworth, I have carried out a small comparative study on the fate of small rural schools in eight European countries (Sigsworth & Solstad 2005). Finally I am able to draw on a recent Norwegian study under publication which in particular focus on the many small rural schools working under the threat of being closed (Solstad 2008). Although this latter study is purely Norwegian, the issues it is addressing and the findings documented are just as relevant for the other Scandinavian countries and for many other countries in Europe or worldwide.

Small rural schools, on the one hand, and small communities or sparsely populated areas on the other, are closely intertwined and interdependent. To the extent globalisation affects rural communities it also makes an impact on the schools in those communities. Furthermore, to the extent globalisation has consequences on the functioning of small rural schools, it also affects

the communities they are serving. Therefore, before specifically looking at the education provision, I will comment on globalisation as such and some of its observed or likely repercussions on rural life and rural communities.

2. A WORST CASE SCENARIO

Sticking to ideas such as modernity, plurality, effectiveness, free choice, open competition, etc. in a globalised world, it may be reasonable to ask whether or not there is room for people living in small communities and peripheral and sparsely populated areas within industrialised and high cost countries such as Sweden and Norway. Should people live in small and remote communities where public and private services can be difficult to run in line with national and international standards of quality and effectiveness? Maybe the following scenario would be more in tune with the need for economic efficiency and demand for high quality services and choices in contemporary societies: The approximately 13 million people who live on the Scandinavian peninsula were to be gathered in some 30 larger cities, still moderate in size by international standards. In such a circumstance the production of goods as well as the provision of all kinds of services could be run efficiently in line with the principles of free competition and the market mechanisms at large.

But, you might ask, what about the production and activities important for the national economy presently being carried out by people living in rural areas, such as farming, fishing, forestry, mining and hydro electric generation? The answer from a narrow efficiency point of view would probably be a simple one. The production of the necessary raw materials – that is harvesting of all kinds on land and sea, including mining – could be carried out in the same way as off-shore oil production, by sending out work teams for periods of, say, a fortnight. All kinds of processing could be carried out in the above-mentioned towns and cities, or the raw materials could be sent to far away low cost countries. Already we can witness Norwegian fish being sent to China for processing and further export to the European and American markets!

Although few, if any, politicians, economists or social science researchers would openly and actively argue for the kind of rational and efficient demographic structure as described above, there are a number of circumstances which indicate that this is the direction in which events are running. In what follows we will comment on three such circumstances: modern technology and changes in the primary sector of the economy, market economy and liberalism, and mass media and the global youth culture.

3. CIRCUMSTANCES THREATHENING RURAL COMMUNITIES

Technological development

Mechanisation and rationalisation within the primary sector of the economy have partly opened up the opportunity for, and partly forced, the smaller production units to merge into larger ones, thus dramatically reducing the demand for manual labour in rural Scandinavia, especially since the end of World War II, that is long before the term globalisation was in current use. As a consequence many previously thriving rural communities all over Europe are totally or almost depopulated.

Whereas the impact of this kind of change in production and economy on rural population decline gathered momentum across the 1950s and 1960s, the remaining two circumstances which I will comment on belong to the period from 1970 up to present day. These are also the processes commonly subsumed under the term globalisation.

The market economy and liberalism

Over the last 20 to 30 years international ideas under such headings as market economy, economic liberalism, deregulation and "New Public Management", perhaps with globalisation as a kind of general notion, have made their impact on all kinds of production life as well as on private and public services in the industrialised capitalist world. Both Sweden and Norway are countries with a tradition of strong state level involvement and control in order to secure equitable services, and to equalise, as far as possible, the conditions for economic activities, across the countries.

A Norwegian economist, Paul Olav Berg (2004) points out that the state level gradually has lost some of its powers to carry out an active regional policy aiming at stimulating settlements and economic activities in sparsely populated areas because such policies (e.g. subsidised transport expenses and differentiated labour taxation) are in conflict with international agreements within the World Trade Organisation or the EU's free market principles. He also demonstrates that when state owned industries are made into stock market companies, e.g. post, railway and telecommunication, and exposed to the same demands for profit as are the private industries, the peripheral and sparsely populated areas become the losers. Railway lines that are not profitable are closed down, electrical power lines that cater for few consumers are not kept, even broadband for effective ICT communication tends to reach the small peripheral places very late, if at all. Processes like these put established industries at risk and make the sparsely populated, peripheral areas less attractive for establishing new enterprises.

Another threat for many local communities is associated with the changes in owner structures related to a globalised economy. Companies that at the time were established by local entrepreneurs ("gründers"), or state owned enterprises strategically located to create work in economically impoverished areas, are made into, or being bought by, stock market companies, thus losing their local ownership with a sense of responsibility for, and loyalty towards, the local community. Stake holders, having no local attachment, and quite often no regional or even national moorings, are looking for the highest possible profit, and are not too concerned about local employment. The result may be uncertainty about the future of the activity; the production unit may be closed down, or moved to a place promising more profitability. Furthermore, when the top management of the production unit is located in a distant big city, the tendency may no longer be to rely on local sub-contractors nearby the production site. Again the small rural communities tend to be the losers (Lindkvist 2004).

As a consequence of these processes we have in Norway over the last decades witnessed such a scale of rural-urban migration (Figure 1) that, if it continues, numerous rural settlements will only exist as holiday sites in another 50 years or so. There are also circumstances where people tend to leave, or avoid settling down in, small peripheral places even when opportunities for employment are ample. One crucial question, therefore, is whether young people want to live in small places with difficult access to the kind of facilities that the urban areas offer. Several Norwegian studies indicate that rural youth, and in particular those qualifying for higher education or for achieving a craft certificate are also those who most often plan for a life away from their own rural community or region (Øia 1994; Frønes1996; Aamoth 1996). Similar conclusions were also made from an international comparative study covering several European countries presented in the volume Voices of Rural Youth. A Break with Traditional Patterns (Dax & Machold 2002). Put simply, the question may be stated as follows: Is the kind of life that rural areas can offer sufficiently attractive for young people in a globalised world? We therefore have to look at another aspect of globalisation.

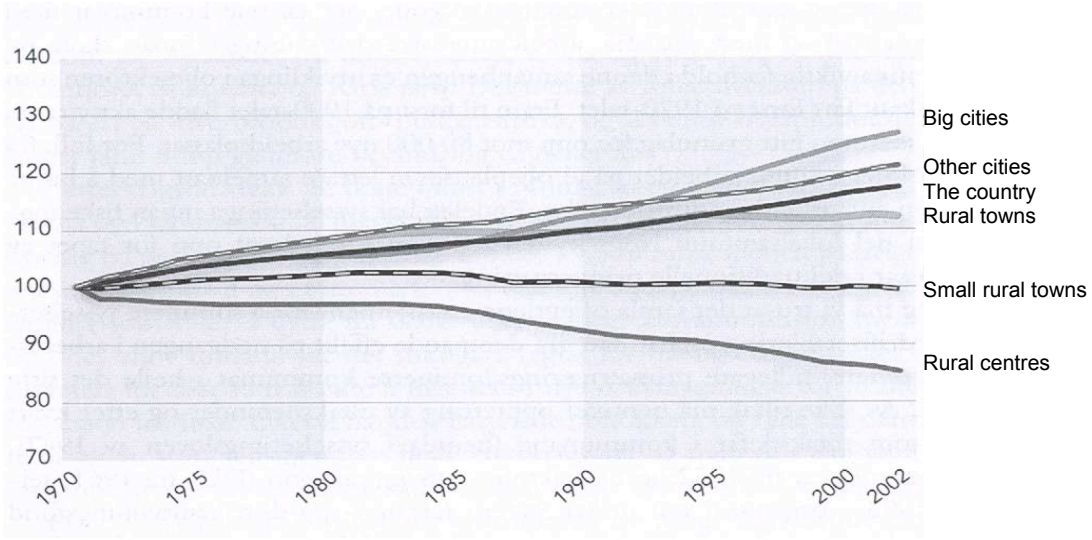

Figure 1. Demographic changes in Norway since 1970. 1970 = 100. (NOU 2004:2, p. 43)[1]

Modernity, the global youth culture and urbanisation

Some years ago the home, the neighbourhood, the local community, the school and the working life at the place of residence were the dominant socialising agencies for children and young people. Today, a national, or rather, a global, influx of information and impressions are competing for the attention of the young and for being the dominant providers of knowledge, attitudes and values. Through TV, video films and computer plays children from pre school age onwards are, everywhere in the industrialised world, exposed to, and stimulated by, the same fantasy figures developed in a few influential and wealthy urban milieus, especially in the U.S.A. This flow of impressions, impulses and information reach out to the children directly, generally without being filtered through family, playmates or teachers. This situation is more or less the same everywhere, whether in Oslo or on a Lofoten island, whether in London or in a village in the Lake District.

Researchers and theory builders may have different ideas as to the consequences of these developments. With specific reference to sparsely populated and remote areas, we will point at some possible consequences.

Disembedding, free setting

In his already almost classical work The Consequences of Modernity, Anthony Giddens (1990) presents his theory about the relative free, disconnected position of the modern man, whether in relation to family, social grouping or in relation to local community, home environment, place of living or growing up. This situation allows young people great freedom to shape their own lives relatively independent of family traditions or local habits. This freedom of choice may, however, also create uncertainty, frustration and a risk of failure regarding plans and ambitions for their own future. Such plans may be founded more on a glorified picture of life in the big outside world than on factual triallings of their own capacities in realistic circumstances.

[1] The categories refer to regions defined by their regional centres: Big cities (>50,000); Other cities (15,000-50,000); Rural towns (5,000-15,000); Small rural towns (2,000-5,000); Rural centres (<2,000). (NOU 2004:2, p. 39)

Homogenisation - weakening of local characteristics and ties

The enormous worldwide flow of information and the more open and widespread communication between countryside and cities, between north and south etc. may weaken traditional differences in ways of thinking, priorities and patterns of action among people from different regions, from sparsely and more densely populated areas, from peripheral or central locations. As most of the 'new' knowledge and new trends are produced in the economic, political and cultural strongholds, that is the larger cities, or at least filtered through urban channels, it may be reasonable to believe that, first and foremost, it is the urban cultural elements and the urban way of life that are communicated through the mass media.

Arguably, it is the small social units to be found in small places and in the sparsely populated areas that are the more vulnerable ones and, therefore, more prone to lose their specific characteristics as local communities. Not only have the external stimuli become stronger over recent decades, but in addition, the local arenas for interacting are becoming fewer and weaker. The previous working togetherness is largely gone and several of the traditional places where local people met incidentally, such as the local shop, the post office, the bank, and, in particular the school, may no longer be present in the community.

From local community to "place"?

Given the developments described above, some social scientists and rural researchers have been tempted to abandon the concept of "local community" and rather refer to the geographical term of "place" (Heggen et al. 2001). Living geographically close, even in a small place, does not necessarily mean that people hold much in common, or that they constitute a "community".

However, even though the people of a certain place no longer have a lot in common, it is nevertheless the case that certain characteristics are likely to be shared such as nature and climate, culture and history, family relations, common experiences relating to leisure time activities etc. I will argue that it is still relevant to stick to the notion of local community though this feeling of being a community, of integration, of attachment to the place may be weak or strong, and generally weaker than before. Thus, the impact of the local community as a socialising agent for children and youngsters will also vary accordingly. Several recent Norwegian studies on identity formation among rural youngsters give reason to modify the concept of modernity suggested by Giddens and others who stress an extreme individualism and "cultural free setting" (Ziehe 1995) from the group, the home environment and the local community (Paulgaard 2001; Wiborg 2001).

4. SMALL COMMUNITIES – GLIMPSES OF HOPE

Is it, perhaps, a somewhat pessimistic picture of the future of small rural communities that I have sketched above? We do not need them for food production, or for the exploitation of resources related to land, water, woods or mountains. We have also demonstrated that the frames provided by the larger society through a globalised market economy and more liberalised public management are not at all favourable to the economic activities and the needs of small and peripheral communities. We have also referred to theories and research findings indicating that the globalised mass culture, mediated through modern information technology, is not likely to foster the preference among young people for locating themselves as adults in typical rural settlements.

Despite these trends, the official policies – at least the political rhetoric - of both Sweden and Norway, and certainly other European countries, is that of keeping also the sparsely populated areas populated (SOU 2000:87; St.meld.nr.21 [2005-2006]). To keep up the political will and popular support for a rural future, even if there might be negative consequences in purely economic terms, at least in a short-term perspective, it may be right to pay attention to a list of pros for the survival of small and often remote rural communities. Such a list may include the following:

- Different types of settlement, different geographical settings, and communities having different qualities, provide diversity and variety and make it possible for young people to have a choice with regard to where to settle, and what kind of life to live.
- Tradition, history and culture connected to local communities and places are values in a globalised world that rich countries, such as most European ones, ought to protect and cherish, even if expense is involved. In Switzerland and France there are schemes to make marginal mountain farming sufficiently profitable to the benefit of tourism and in order to take care of the cultural heritage.
- Related to the above-argument, characteristics of places and communities may have the potential for sustainable economic activities. Place-based tourism may be one example, small scale agricultural niche production another. Even if market mechanisms, as we have seen, undermine small scale farming and fishing, in countries such as Sweden and Norway, there are also growing numbers of affluent people who are willing to pay for quality and distinctiveness.
- It is the continuous efforts and creativity over time of people living in different places and communities, and who know the historic and natural conditions in those various places and local communities that, over time, provide the best chances for taking advantage of the opportunities for sustainable economic developments based on the locally available resources. My worst-case scenario for the future Scandinavia, may after all, in a long term perspective, not be the most profitable one.
- Strong, sustainable rural communities around the country make the demands for investment in new urban developments less imperative, whilst at the same time employing already established infrastructure. In a global context food may be a scarcity as soon as the standard of living in developing countries improves and such countries no longer accept the role of being food providers for the rich countries. Marginal farmland in Europe at present being abandoned, may again be profitable.

In spite of the aspects of globalisation listed above which are likely to endanger the future of many small rural communities, it is also possible to picture the situation for such communities more optimistically. In the Swedish-Norwegian study referred to we have numerous examples of costal as well as inland small communities experiencing optimism and even population growth. The island of Lovund in the county of Nordland, Norway may serve as a striking example. Though this island cannot claim to have better natural resources or conditions than many other coastal places, local gründers, in fact teachers, were, however, in the forefront nationally when the fish farming industry was in its infancy. Later on, fish processing, export services and tourism have been added to make this tiny island a flourishing community of less than 300 people.

The point is to demonstrate that the possibilities and options for sustainable economic activities in small rural communities generally are considerably larger than those presently being exploited. The essential structural conditions such as taxation, subsidies, advisory services,

public transport, etc. must enable existing businesses to prosper and encourage new ones to become established. An even more essential requirement is it that young people have a wish to settle and live in such communities, that they are able to see the opportunities within local resources, and that they have the competence and qualifications necessary for exploiting these resources and possibilities. Young people must see that it is feasible to make a decent economic outcome and be able to make a confident judgement on the likelihood of having a valuable social and cultural life in the small community of their choice. One crucial precondition for young people to reach a positive conclusion, is the existence of basic public services such as kindergarten and primary schooling in, or not far from, the actual place of living.

5. A ROLE FOR THE SCHOOL?

Turning more explicitly to the role of the small school in the small communities in a globalised world, I will first comment on an educational challenge related to this vitalisation or strengthening of the rural economy.

Educational efforts which are especially designed for the development of attitudes, knowledge and skills conducive to young people taking job-creating initiatives, are generally referred to as teaching for entrepreneurship or for economic innovation. We can take for granted that the best possible knowledge of, and insights into, the local and regional resource basis and markets locally and in the wider context, among as large a proportion of the local population as possible, are serving to enhance the chance of job-creating initiatives locally. We can term such competences specific entrepreneurial qualifications. If such qualifications are matched with, what might be conveniently termed, general entrepreneurial qualities, that is creativity and curiosity, cooperative skills and working capacity, tolerance of uncertainty, motivation for success, etc., the likelihood of an individual, or group of individuals, taking entrepreneurial initiatives are further enhanced (see Figure 2). Finally, if the specific and general entrepreneurial qualities are combined with a strong feeling of local/regional identity and belongingness, the chances that such job-creating initiatives are being taken to the benefit of the local community or region should be of the best.

The following three strategies or activities on behalf of the school may be seen as particularly relevant in the preparation for entrepreneurship in their home environment:

- The use of local teaching materials for developing a local identity and belongingness, as well as for developing the specific entrepreneurial qualities (see figure).
- Applying active learning approaches, i.g. topic or project work, to promote general entrepreneurial qualities such as creativity, curiosity, cooperative skills, initiative and tolerance for risk taking.
- Student enterprises may serve to stimulate both the specific and general entrepreneurial qualities.

Analyses of national curricula of Sweden (Johannisson & Lindmark 1996) and Norway (Solstad 2000) convincingly demonstrate that these documents allow for these kinds of priorities in the applied curricula, as is also most likely the case for most other European countries. For education to play such a role, two conditions have to be met. First, there need to be schools in such communities, and second, these schools must have conditions allowing them to work in ways conducive to the prosperity of small communities and sparsely populated areas.

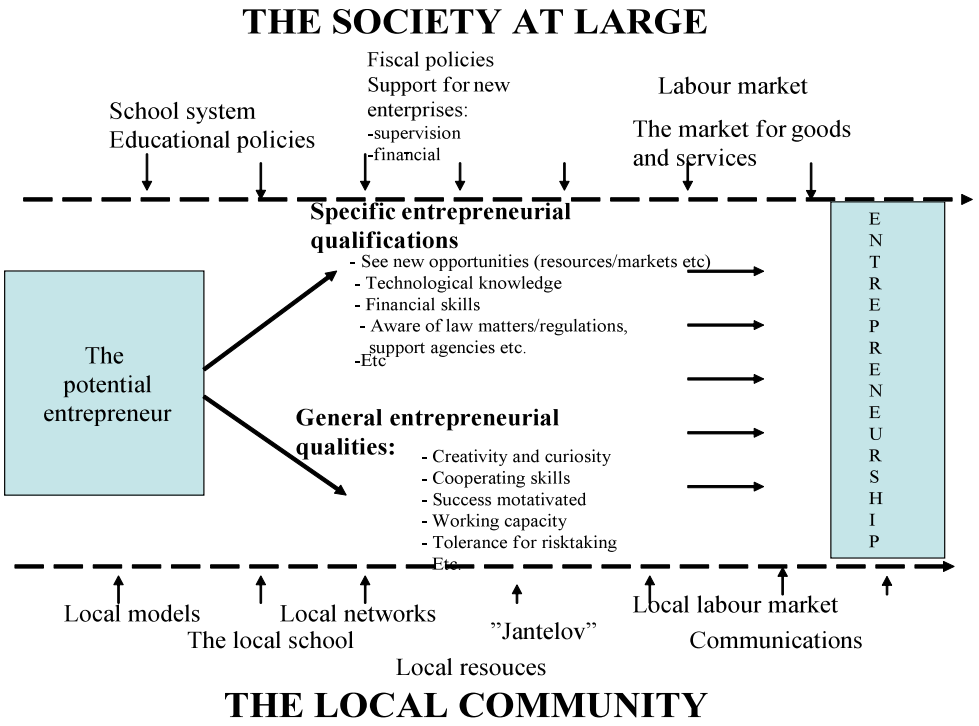

Figure 2. The potential entrepreneur. (Solstad 2000, p 30)

6. DECENTRALISATION AND THE CLOSURE OF RURAL SCHOOLS

Across the 1980s and 1990s a wave of decentralisation and deregulation was affecting most Western countries. In line with that trend Norway introduced in 1986 a block grant system for transferring money from national/state to local/municipal authority level. In Sweden this change was made in 1993. Ideally, the amount of money transferred to each municipality was now to be based on so-called objective criteria such as population density, demographic structure, communications and local tax revenues. Previously, although the municipalities were running compulsory education, the necessary funding for doing so was largely provided by earmarked money from the state. After the introduction of the block grant system, each municipality had, in effect, to determine its own priorities for spending across the various sectors of public services. Increasing demands for public services, especially within the health sector, combined with high per pupil costs in small rural schools, tempted, or forced, many rural municipalities into amalgamating schools wherever possible. In Norway, and even more so in many other European countries, shrinking public budgets during the 1980s and 1990s exacerbated this unintended effect of transferring power from central to local level authorities. Whereas the number of small rural primary schools having 50 pupils or less remained almost unchanged during the ten years before 1986, by 1997 this number was reduced to almost the half of its original size. Except for Ireland where compulsory education is financed and run directly from the national level, similar developments iwere seen in a number of European countries such as Sweden, Finland, Iceland and the United Kingdom (Sigsworth & Solstad 2005).

7. A NORWEGIAN SURVEY ON SCHOOLS FACING CLOSURE

A comprehensive survey was carried out in 2005-2006. It embraced 142 sparsely populated municipalities and included the surviving compulsory schools (primary and lower secondary), of these municipalities which numbered around 500. The municipalities were identified on purely geographical criteria; that is all those municipalities in which less than 30 % of the population lived in places/villages having more than 200 inhabitants. Questionnaire data were collected from municipal level (100 % return) and school level (82 % return).

The format of this presentation only allows for a few comments on some of the main findings of this survey, which, I think, may suffice to demonstrate how decentralisation, deregulation and the application of market economy within the public sector can seriously harm the education provision in rural areas of a rich country such as Norway, and thus threaten the principle of an equitable education provision.

School closures: Range and reasons for closures

In spite of the fact that the tenor of national level recommendations for the municipalities, both at the time of introducing the new income system for the municipalities and later on, was against the closure of rural schools on financial grounds, budgetary concerns were the most frequently reported reason for the decision to close a school. Falling pupil rolls came second. In every fourth municipality, further school closures were expected in the following five years' period. Again, as seen from municipal level, the most frequently mentioned reasons for expecting further school closures, was budgetary in character.

Though very small schools (≤10 pupils) and schools moderately distant from larger neighbouring schools are most often targeted for closure, there is evidence over the period covered which indicates that school closures are more frequently affecting larger schools and schools having relatively long distances to a neighbouring larger school. The school level data shows that almost four out of ten head teachers of schools having 30-70 pupils, some also quite distant from the nearest larger school, reported the future of their school to be insecure in a five years' perspective.

Our data show that almost every second remaining school in the 142 SPA municipalities included in our investigation have previously experienced uncertainty about their future, or are at present under threat of being closed. Also, a large number of those schools already closed down (actually around 60 %), were running under threat of closure several years before the final decision to do away with the school was actually taken. Thus, to carry out schooling in a state of uncertainty is quite common in rural Norway, as it is in several other western countries (Sigsworth & Solstad 2005).

Although our questionnaire approach does not allow for an in-depth analysis of how the threat of closure affects the everyday running of the school, the head teachers' comments in response to an open question targeting this issue, provide some insight into the matter.

Schooling under the Sword of Damocles

Local resistance

As seen by the head teachers of the still existing, but threatened, schools, such mobilisation to protect the school is strong in eight out of ten cases. Besides the judgement that the local school

provides a safe and good learning environment for the pupils, the head teachers see the likely detrimental effect for the local community as a whole as the most important reason why parents and local people generally are fighting for the life of the local school.

From a political science point of view, it is interesting to observe that the decentralisation of power from state to municipality level, of which the new income system for the municipalities may be seen as part, seems, in fact, to force the municipalities to centralise their school structure and, in most cases, to do so against the will of the local people affected.

Though a few head teachers reported the daily activities of the school not to be negatively affected by the uncertainty about the future of their school, and some even saw the threat of closure as having positive effects on school life, the overwhelming majority of the head teachers reported on the negative experiences associated with the fear of being wiped out. Some 50 out of the total 150 responses which were given may be subsumed under the following heading:

Frustration, weariness and aggression

There is a sense of head teachers and teachers feeling squeezed between their employer's policy of school closure and the struggle on behalf of parents and the local community at large to save the school. The following quotations may serve to illustrate the situation for many schools and communities over quite lengthy periods of time:

> *We lived in uncertainty for a number of years – [we] were frightened of negative references – did not risk mentioning [for parents, LEAs etc.] possible difficulties for fear of a bad reputation and thus of being closed down. The teachers were struggling far too hard and were worn out keeping the school going. All the same we were closed, but re-established as a private/free school which was good.*

It can easily be seen that the kind of struggle, energy sapping, frustration and dispiritedness among the staff of a school which arose from a threat of closure interferes negatively with the quality of the education provided. About one third of the head teachers' comments did actually touch upon such effects.

Negative effects upon educational work: some instances

- Long term planning is suffering as the following quotation exemplifies:

> *Those years when we did not know about our future took the working spirit away. It was difficult to plan and to look ahead. We got a feeling of inferiority – and felt incompetent.*

> *Difficult to plan for three-years' periods [as expected]. Depressed staff. Maintenance work inside and outside [the school building] was made difficult.*

- Creativity among staff members were deflected from their main purpose, namely to promote learning among young people

> *Negative feelings among staff – the motivation for developing new approaches is low when the ghost of school closure is hanging over our heads.*

- Threatened schools forced to adopt a strategy of minimum demands for resources, as the following quotations indicate:

When budget time approaches, we feel every year that we have to "defend" our operations. We are trying to save money as much we can, but we have to run our school justifiably. By now we feel that the resources given are down to the bottom line for our existence.

Clearly, school environments dominated by insecurity and stress among staff, pupils and parents and having teachers who are distracted from their planning and preparatory work, do not constitute the best way of promoting learning and development among the pupils. In short, over time such conditions negatively affect the overall quality of the school. This situation may also have adverse consequences for the local community at large - what we can fairly describe as the pupils extended learning environment.

Consequences for places and local communities

We have already referred to the general unrest, anxiety and frustration among parents which stems from an unclear school situation and to how this situation also stimulates local mobilisation to keep the school. A number of head teachers comment on the likely community consequences of a constant closure hanging over the school and the prospect that, at any time, it might be lost. Some are concerned about how the possible loss of the school could affect settlement and the recruitment of young families. The following statements convey the flavour of such anxieties:

[The clos*ing down of the school would be] negative as regards new settlers. Families with children will not build and settle down here.*

*The place is a kind of industrial centre. Kindergarten/school absolutely necessary for recruiting [workforce] f*or local industries.

Other head teachers observe how school conflicts may nourish antagonism between the centre and the periphery within the municipality or between different places, each fighting for their own school's survival:

Endless conflict between [municipal] centre and periphery.

A conflict ridden local community is clearly not optimal for the kind of desirable local learning pursuits that the curriculum is asking for. The nature, culture, social and working life of the community constitute the extended learning environment of the pupils and, if their learning within it is to be fruitful, at least two conditions have to be met. First, the teachers must have the necessary creativity and planning time, and, second, important local resource persons must be available for negotiations and cooperation. In a situation of unrest and anxiety for the future of the school and the whole community, neither of these conditions is likely to be met.

Paradoxes actualised by the Norwegian study

Let me finish the presentation of this Norwegian study by pointing out some interesting paradoxes which also, at least partly, can be seen in the context of globalisation more generally.

Decentralisation ↔ centralisation. The ideology of political decentralisation, of transferring power from national to municipal level, has led to a wave of school centralisation that we in Norway have not witnessed since the early 1960s. Interestingly, it may also be observed that this formal decentralisation seems to have made the very local level more powerless than before.

Public poverty ↔ private affluence. Before the oil boom, when Norway was poor, schools were not closed down on financial grounds. Compulsory education was seen as such an important service to people and communities, that the municipal economy, or different municipal priorities, should not be allowed to lead to inequitable conditions for learning and development among young people. A poor state took the full responsibility for financing basic education.

Demand for high quality education ↔ sub-standard learning environments. An equitable and high quality education is a political must. Still, we have a system that leads to schools providing sub-standard learning environments due to insecurity, lack of resources, energy sapping, frustration and anxiety in respect of staff, parents, pupils, and the wider community.

Small rural communities should live ↔ an important, supportive community institution is being destroyed. Several government documents over the last few years have underlined the political will and intention of keeping the whole of Norway alive and that includes the small and more remote places and settlements. At the same time, we have seen conditions established that, in effect, threaten the school, perhaps the most important local institution, a basic element of local welfare, from such places.

In short, these Norwegian findings seriously question whether schooling under threat of closure is compatible with the principle of equity in education. They also challenge more generally the decentralisation policies of the 1980s and 1990s in the light of national ambitions of rural survival and prosperity. More in-depth studies employing qualitative research approaches on these issues must be carried out. Given that the policies of decentralisation and the question of closures and amalgamations of rural schools are at present highly relevant, not only in Norway, but also in a number of other European countries such as Sweden, Finland and the United Kingdom, a comparative approach ought to be considered.

8. SUMMING UP

I have argued and, to some extent, demonstrated that processes associated with the broad notion of globalisation in the European countries of Sweden and Norway over the last couple of decades are having the effect of speeding up the depopulation of rural areas that started in earnest in the mid-1900s due to mechanisation and less labour intensive working methods in the primary sector of the economy. I have even suggested that the small rural communities may not have a place at all in modern high-cost countries if the forces of market economy with its demand for profit and efficiency, and an urban based global mass culture, are to prevail unchallenged in the future.

Despite those disadvantaging forces, I have, however, offered glimpses of hope for a rural future. This hope is further nourished by the declared political will at national levels to keep the small communities and sparsely populated areas alive. Though education is only one policy area to be addressed if revitalisation of small communities is to happen in a broad scale, I consider education to be an important one. In the first place, basic education should be available. Thus, the ongoing processes of closing down rural schools on purely financial grounds which I have in some detail documented for Norway, but which occurs at a similar scale in several European countries, should be discontinued. Second, education should play a more active role in supporting rural communities generally, and particularly so by motivating and qualifying young people for taking initiatives related to the local economy.

REFERENCES

Aamoth, P.O. (1996): Utdanningssystem og utdanningsplaner. (Education system and plans for education.) I Øia, T. (ed.): Ung på 90-tallet (Young in the 1990s.) Oslo: Cappelen, pp. 245-260.

Berg, P.O. (2004): Staten som distriktspolitisk aktør. (The state as a district policy agent.) I Lindkvist, K.B. (ed.): Ressurser og omstilling – et geografisk perspektiv på regional omstilling i Norge. (Resources and change – a geographical perspective on regional change in Norway.) Bergen: Fagbokforlaget, pp. 237-265..):

Dax, T. and Machold, I. (2002): Voices of Rural Youth. A Break with Traditional Patterns? Wien: Bundesanstalt für Bergbaueren Fragen.

Frønes, I. (1996): Revolusjon uten opprør: Kjønn, generasjon og sosial forankring i Norge på 1980-talet. (Revolution without revolt. Gender, generation and social mooring in Norway in the 1980s.) Tidsskrift for samfunnsforskning, 1/96, pp. 71-86.

Giddens, A. (1990): The Consequences of Modernity. Stanford, Calif.: Stanford University Press.

Heggen, K., Myklebost, J.O. and Øia, T. (eds.): Ungdom. I spenninga mellom det lokale og globale.(Youth. In the conflict between the local and the global.) Oslo: Samlaget Oslo: Samlaget.

Johannisson, B. and Lindmark, L. (1996): Företag. Företagare. Företagsamhet. (Enterprise. Entrepreneurs. Entrepreneurship.) Lund: Studentlitteratur.

Lindkvist, K.B. (ed.) (2004): Ressurser og omstilling – et geografisk perspektiv på regional omstilling i Norge. (Resources and change – a geographical perspective on regional change in Norway.) Bergen: Fagbokforlaget.

NOU (Norges offentlige utredninger [White Paper]) 2004:2: Effekter og effektivitet. (Effects and efficiency).

Paulgaard, G. (2001): Sted og tilhørighet. (Place and attachment.) In Heggen, K., Myklebost, J.O. and Øia, T. (eds.): Ungdom. I spenninga mellom det lokale og globale. (English translation, see Heggen et al. above.) Oslo: Samlaget, pp. 18-36.

Sigsworth, A. and Solstad, K.J. (eds.) (2005): Small Rural Schools: A Small Inquiry. Nesna, Norway: Nesna University College. (Report No. 64.)

Solstad, K.J. (2000): Entreprenørskap – noko for skolen? (Entrepreneurship – a concern of the school?) Bodø: Nordlandsforskning (Report 12/2000)

Solstad, K.J. (2009): Bygdeskolen i velstands-Noreg. (The Rural School in an Affluent Norway.) Under publication.

Solstad, K.J. and Thelin, A. Andræ (2006): Skolen og distrikta - samspel eller konflikt? (The school and the rural areas. Working together or in conflict?) Bergen: Fagbokforlaget. (A slightly different version of the volume also appears in Swedish writing as Andræ Thelin, A. and Solstad, K.J. (2005): Utbildning i glesbygd – samspel eller konflikt? Stockholm: Myndigheten för skolutveckling.)

SOU 2000: 87: Slutbetänkande frå den regionalpolitiska utredningen. (Final conclusions from the regional policy survey.)

St.meld. nr. 21 (2005-2006): Hjarta for heile landet. Om distrikts- og regionalpolitikken. (A heart for the whole country. On the district and regional policies.)

Wiborg, A. (2001): Utdannelse, mobilitet og identitet. (Education, mobility and identity.) In Heggen, K., Myklebust, J.O. and Øia, T. (eds.): Ungdom. I spenninga mellom det lokale og det globale. (English translation, see Heggen et al. above.) Oslo: Samlaget, pp. 136-151.

Ziehe, T. (1995): Kulturanalyser, ungdom, utbildning, modernitet. (Cultural analysis, youth, education, modernity.) Stockholm: Symposium bibliotek.

Øia, T. (1994): Norske ungdomskulturer. (Norwegian youth cultures.) Vallset: Opplandske bokforlag.

IMPROVING PROFESSIONAL LEARNING IN RURAL AREAS: IMPLICATIONS FOR TEACHER EDUCATION PRACTICE FROM AUSTRALIA AND KOREA[1]

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ABSTRACT

This paper discusses implications for professional teacher learning that emerged in the process of developing research collaborations between two university-based research centres in Australia and South Korea. Several issues emerged as common. These include:

1. the low academic achievement of students in rural areas compared to those in metropolitan areas;
2. the willingness of Federal Governments in both countries to provide funds to help address concerns of rural education;
3. the difficulty to recruit and retain teachers in rural areas; and
4. the importance of having highly experienced and qualified teachers in rural areas.

The approach adopted by both countries to meet their common concerns is different. In Australia the focus was on school students and working professionally with in-service teachers. In Korea the focus was on improving the preparation of pre-service teachers so that they are better equipped to meet the demands of a rural placement. This paper starts with the empirical evidence for the impact of education on economic growth; then briefly describes the purpose and structure of the two research groups. This is followed by an analysis of student performance. Some current endeavours are discussed to elaborate the approach adopted in each country. Finally, implications that inform teacher education practice are drawn from the research and professional learning activities carried out.

Keywords: ***Professional learning, teacher education, rural education***

1. INTRODUCTION

This section provides a background to the paper by addressing four areas. The first area considers links identified between economic growth and student learning outcomes. The second and third parts consider the underachievement of rural students in both countries a well as attempts by these countries to address this issue. Finally the purpose of the paper is explained.

Economic Growth and Education

Empirical evidence points strongly to the notion that student education outcomes are a major determinant of economic growth. Barro (2002)[2] reported an analysis of empirical data for economic growth rates of per capita GDP for over 100 countries for three decades, i.e., 1965-1995. The results showed that average years of school attainment of males aged 25 and over at

secondary/tertiary levels are significantly positively related to economic growth. Similarly, the analysis of the forty-three OECD countries that participated in PISA (the Program for International Student Assessment in science, mathematics, and reading) found a significantly positive correlation between student scores and economic growth (Barro, 2002).

When the quantity of schooling, represented by years of attainment at various levels, is compared with quality of schooling, indicated by international test scores, the latter is more important than the former. While one-standard-deviation increase of school attainment variable would raise the economic growth rate on impact by 0.2% per year, one-standard-deviation increase of science test scores would increase the economic growth rate on impact by 1.0% per year.

The relationship between the economic growth and the overall international test scores variable is shown in Figure 1, which suggests that education has strong explanatory power for economic growth.

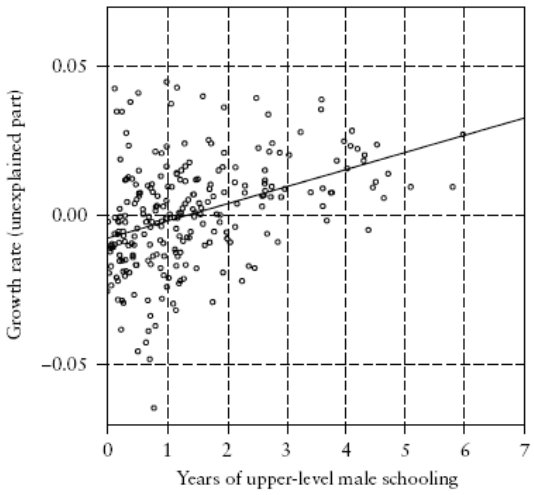

Figure 1. The relationship between economic growth and the overall international test scores variable (Barro, 2002, p. 18, Figure 2).

Under-achieving Rural Students in Australia and Korea

In both Australia and Korea, rural students are not achieving as highly as metropolitan students. International and national reports on student performance have provided 'hard' evidence to pinpoint the need to address equity issues. When Australian rural students were compared with Australian metropolitan students using 2006 PISA data, it showed that there was a decline in performance scores as one moved further from large metropolitan areas. In 2006, the mean scores for students in metropolitan, provincial and remote areas of Australia were 526, 508, and 468, respectively. The differences in these scores were statistically significant and highlight the plight of education provision in a country as vast as Australia.

When Korean rural students were compared with Korean urban students (Im, 2007; Im, Lee, & Kwon, 2007), it showed the same trends as evidenced in Australia. Korean urban students exceeded Korean rural students in academic achievement, especially in English and Mathematics (average effect size differences were 0.64359 and 0.61588, respectively). This represents roughly two years of growth. Im's (2007) analysis of significant factors for the educational gap between rural and urban areas showed that:

1. the rural areas were significantly lower in socio-economic status than the urban areas;
2. the rural areas had lower morale than the urban areas, and the lower morale affected rural education more significantly than teacher and instruction aspects; and
3. the discrepancy in quality education between rural and urban areas was severest in secondary schooling compared to primary and middle schooling.

The under-achievement of rural students in both Australia and Korea raises a critical equity issue for both nations. Students in rural and regional areas of Australia and Korea are not achieving the learning outcomes, not experiencing the same standard of teaching, nor receiving the same access to resources as their capital-city peers. This under-achievement is one of the most pressing issues in education in these countries today. These data, described above, were the catalyst for both Australian and Korean Governments to embark on extensive programs to bring about change, help to meet challenges, and create opportunities to support quality education provision in rural communities.

Addressing this Equity Issue

In Australia in 2004 the Australian Federal government established through a $4.95 million fund the National Centre for Science, Information and Communication Technology and Mathematics Education in Rural and Regional Australia (SiMERR Australia) to begin to address issues in rural education in Australia. SiMERR Australia is a national research body, based at the University of New England, and has eight hubs in universities representing each State and Territory.

In 2004 the Korean Government invested AU$1.63 billion for New University for Regional Innovation (NURI) initiative to address the issue of equity in quality life and quality education and to strengthen local universities and promote balanced regional and national development in Korea. Selected regional universities received the NURI grants for various science, ICT, and engineering projects. Kongju National University was the only university receiving NURI grant for education. Through the NURI grant, NURI Teacher Education Innovation Centre (NURI-TEIC) was established in July 2004.

In January 2007, a NURI-TEIC team visited the SiMERR National Centre to observe and discuss aspects of organisation and regional education projects directed by SiMERR. Strong and common interests and challenges were identified for working together and providing leadership for regional innovation in both countries and on an international level.

Purpose of this Paper

The purpose of this paper is 1) to describe briefly current endeavours of SiMERR Australia and NURI-TEIC Korea and to elaborate on the outcomes and approaches adopted to improve professional learning in rural/regional areas in each country; and 2) to suggest implications for professional teacher education that emerged in the process of developing research collaborations between the two research centres.

We begin with a brief description of the purpose and structure of SiMERR Australia and NURI-TEIC Korea. This is followed by discussion of common issues in rural areas. Implications are suggested for teacher education practice and rural innovation through education.

2. SiMERR AUSTRALIA AND NURI-TEIC KOREA

This section explores the nature and some of the outcomes of the two research centres – the SiMERR National Centre in Australia and the NURI-TEIC Centre in Korea.

SiMERR Australia

SiMERR Australia was established to address the inequities in education learning outcomes in rural/regional areas identified by numerous national and international reports (e.g., PISA 2003). SiMERR Australia consists of the SiMERR National Centre established at the University of New England (UNE) in Armidale, NSW, and state Hubs (groups of academics at a university in each of the eight States/Territories) in Australia. The vision of SiMERR Australia is that:

1. students will receive quality education to realize their academic potential in science, ICT, and Mathematics;
2. teachers can work in rural/regional areas and be professionally connected and supported; and
3. parents will experience equal opportunity for quality education for their children.

Over the past four years over 130 projects were commenced (with many now completed) by the SiMERR National Centre and its Hubs throughout Australia. SiMERR's projects focus on research and professional development with the aim of improving learning outcomes of all Australian students, and especially those studying in rural/regional areas. Table 1 shows six major projects that have produced significant outcomes for Federal educational policy and student outcomes.

The impact of SiMERR is clear in the following developments:

1. SiMERR provides a strong and viable *infrastructure* for future successes in providing quality education for students in rural/regional areas.
2. SiMERR has built a *network* where teachers, educators, universities, education authorities, and communities can reflect and initiate actions on improving the quality of education in rural/regional areas.
3. Through SiMERR Hubs, SiMERR has established a *culture of collaboration* among highly competitive university researchers, pursuing the common goal of quality education for rural/regional Australia.

NURI-TEIC Korea

NURI-TEIC at Kongju National University was established to achieve regional innovation through teacher education. The aims of NURI-TEIC are:

1. to produce excellent teachers by developing innovative teacher education programs in selected curriculum areas (i.e., Korean language, English, Mathematics, History, Biology, and Computers and ICT), and
2. to distribute the innovative teacher education programs throughout universities in Korea.

Associated with these aims is the wish to pursue educating pre-service teachers who are able to lead Korea as a Knowledge and Information-based society as well as act as professional leaders for rural students.

NURI-TEIC identified teacher qualities appropriate for rural schools, which consist of two aspects. The first was common teacher qualities, obtained through studies in philosophy of education, moral education, subject knowledge, pedagogical skills, assessment skills, understanding of students, communication with students, classroom management, collaborative learning, and development of individual potential. The second was specialized teacher qualities, gained through studies in understanding of rural schools, ability to adjust to rural schools, knowledge of information technology, and life skills ability. To develop the teacher qualities, NURI-TEIC developed a teacher education program (Im, 2007) (see Table 2) based on a meta-analysis (Im, Lee, & Kwon, 2007) with Korean participants. The teacher education program is currently being implemented to pre-service teachers enrolled in College of Education at Kongju National University in South Korea.

Table 1. Six SiMERR Projects and Their Outcomes for Educational Policy and Students' Academic Achievement

Project	**Outcomes**
1. National Survey of Issues in Teaching and Learning Science, ICT and Mathematics in Rural and Regional Australia (Lyons, Cooksey, Panizzon, Parnell, & Pegg, 2006)	Recommendations to advise Federal policy as it relates to addressing inequity in rural students' learning outcomes in Mathematics.
2. Identifying and Analysing Processes of Groups of Teachers Producing Outstanding Educational Outcomes in Mathematics (Pegg, Lynch, & Panizzon, 2007).	Published monographs identifying characteristics of faculty departments achieving outstanding educational outcomes of student learning across the student ability spectrum. Copies of the publication have been widely distributed free to secondary schools.
3. QuickSmart intervention program for middle-school students performing at or below National Numeracy Benchmarks (Pegg & Graham, 2005; 2007).	Solid evidence that students (including Indigenous students) who have been performing at or below national benchmarks in numeracy for many years can be supported and show considerable improvement in basic mathematical skills and understanding.
4. Maths: Why Not? Unpacking reasons for students' decisions concerning higher-level mathematics in the senior secondary years (McPhan, Morony, Pegg, Cooksey, & Lynch, 2007).	Recommendations to guide Federal Government policy decisions on the ways to encourage and facilitate more senior secondary students to undertake high-level mathematics courses.
5. Impact of developmentally-based qualitative assessment practices in mathematics on school policies, classroom instruction, and teacher knowledge (Panizzon, Callingham, Wright, & Pegg, in press).	Evidence of a three-year longitudinal impact on the effects of theoretically-based qualitative assessments practices that focus on formative and summative assessments have on teacher understandings of teaching, subject matter knowledge and teaching actions.
6. Collaborative innovations in rural and regional secondary schools: Enhancing student learning in mathematics and science (Panizzon, & Pegg, 2008).	Evidence of the nature of the successes for widespread rural schools in solving issues relevant to them in the teaching of mathematics and how this professional learning can be encouraged and sustained.

3. ISSUES IN RURAL AREAS

When the SiMERR Australia and NURI-TEIC Korea sought to identify common research interests and possible applications to grant schemes for future research collaboration, various issues and problems in rural education and possible solutions were discussed. The common issues in the two countries include:

1. the low academic achievement of students in rural areas compared to those students in larger metropolitan areas;
2. the willingness of Federal Governments in both countries to provide funds to help address concerns of rural education;
3. the difficulties in recruiting and retaining teachers in rural areas;
4. the importance of having highly experienced and qualified teachers in rural areas; and
5. establishing the academic base for the activities carried out in two long-standing rural universities.

The contrasting issues in rural education between Australia and Korea included the following:

1. The Korean government closes schools with less than 60 students and have them merge into larger schools, while in Australian rural areas, schools with less than 30 students and multi-grade classrooms are still seen as viable.
2. Retaining quality teachers in regional areas is a common difficulty for both countries, but approaches to the issue are different. Korea is struggling to build school cultures where teachers, students, and parents can be proud of their education qualities. In Australia, teachers appointed to regional areas tend to leave for urban areas unless they get married with local people and settle there.
3. Among Koreans, it is strongly felt that improving the quality of regional education should accompany improving the quality of life in regional areas, such as developing cultural centres and services. In Australia, a strong sense of communities supporting each other plays an important role for regional life.
4. The Korean government initiated a reform called New University Regional Innovation (NURI) to achieve regional innovation through specialized expertise of regional universities. Such an initiative is a long-waited call for Australia.

Interestingly, the approaches adopted by the two countries to meet their common concerns are different. In Australia the focus is on supporting and working professionally with practising teachers. A number of research projects by SiMERR (Table 1) have been conducted with in-service teachers with the aim of improving their teaching skills and, consequently, providing quality teaching to rural students. In Korea the focus is on improving the preparation of pre-service teachers so that they are better equipped to meet the demands of a rural placement. NURI-TEIC Korea developed a teacher education program (Table 2) and has been implementing it to students at Kongju National University for the last few years.

One of the reasons for the different approaches taken by SiMERR Australia and NURI-TEIC Korea is related to the aims of the centres and their grant schemes. As SiMERR's vision

Table 2. Teacher Education Program of NURI-TEIC Korea (Im, 2007)

No	Program	Program Details	Y1	Y2	Y3	Y4
1	Program for developing teacher qualities	1) Developing life skills, developing individual potentials.	√			
		2) Program for developing morality of teachers.		√		
		3) Program for mentoring pre-service teachers	√	√		
2	Program for developing ICT pedagogical skills	1) Seminar for effective use of computers for teaching.	√			
		2) Program for developing ICT skills for Compulsory ICT education.		√		
		3) Establishment and management of teaching and learning system for 'e-learning'.	√			
3	Program for developing understanding of rural societies and rural schools	1) Introduction to rural society	√			
		2) Rural society and education		√		
		3) Exploring issues of rural education			√	
4	Program for adjusting to rural schools and rural life and volunteering for service to the community	1) Voluntary work in educational contexts		√	√	
		2) Practicum in rural schools	√	√	√	
		3) Open Campus (Program for inviting rural students to university campus)				
		4) Support for practicum for classroom teaching in rural schools (Development and implementation of practicum manual)	√	√	√	
5	Program for enhancing pedagogical skills in classroom teaching	1) Competition for Microteaching			√	
		2) Competition for new curriculum contents and teaching resources		√	√	
		3) Establishment and management of 'Laboratory for Analysis of Classroom Behaviours' (2 Laboratories)				
6	Program for developing 'global mind'	1) Go abroad for learning foreign language (English)		√	√	
		2) Improve pre-service teachers' ability to teach school subjects in English.		√	√	
		3) Visit rural schools in foreign countries (visiting 2-3 rural schools)		√	√	
7	Program for enhancing specialized teacher knowledge and enhancing success rates for securing teaching positions	1) Seminar for Education Theory, Essays, and Interviews (undergraduates, alumni, 1 – 2 times per year)			√	√
		2) Groups for academic discussions (7 groups)		√	√	√
		3) Groups for job search (7 groups)			√	√

Note: Y1, Y2, Y3, Y4 = Undergraduate Years 1, 2, 3, 4.

statement indicates, SiMERR Australia was established to address equity issues for teachers as well as students and parents in rural/regional areas. Thus, SiMERR's research has been conducted with in-service teachers and their students, not pre-service teachers. On the other hand, NURI-TEIC was established to develop innovative teacher education programs for rural schools and implement the teacher education programs for B.Ed. Secondary Education students at Kongju National University. Thus, NURI-TEIC's research was directed to pre-service teachers with the aim of developing quality teachers with skills and attitudes appropriate for rural schools.

4. IMPLICATIONS FOR TEACHER EDUCATION PRACTICE

The following implications are suggested for teacher education practice based on the above discussion:

1. Intervention in both pre-service and in-service levels can be effective contexts for improving rural education. If sufficient funds are available, greater improvements will occur if both pre- and in-service teacher education are addressed in a mutually supporting manner.
2. For improvements in rural schools, teachers need to be recognised as valuable resources to rural areas and rural life and made to feel part of the broader rural community. This needs to occur in a context of valuing education and seeing the critical need for high levels of education skills and knowledge for rural communities if they are to flourish.
3. Teacher education approaches specific to rural areas, e.g., developing teachers' understanding of rural schools and rural life, will produce greater effects for changes in rural education.
4. To reduce feelings of isolation, teachers should be supported to work as members of teams in subject areas with cognate similarities so as to develop a critical mass of teachers in a school or across schools.
5. To achieve outstanding educational outcomes of student learning, teachers need to have both strong content and pedagogical knowledge. The development of this knowledge is ongoing. Initial teacher education is to provide a sound basis upon which further information and knowledge can be constructed.
6. Professional development activities organized within a school based on identifying issues to be solved within that school, combined with outside support, can be highly effective. Teachers appear to benefit most when the professional learning is provided in their local context and based on their identified needs.
7. Retaining competent teachers in rural areas for appointments of at least five years seems to be a critical goal if the rural education divide is to be addressed in a sustainable manner.

Implications for rural innovation through education can be drawn from the above discussion:

1. Australia and Korea can learn from each other by recognizing common and different problems in rural education between the two countries.
2. International collaboration for rural education can raise awareness of the importance of rural education at international level with the possibility of generating new initiatives.

3. ISFIRE 1 will contribute to building collaboration among expert researchers from across the world for the common cause of rural innovation through education.
4. It is time to raise an issue about a crucial role of rural education on economic growth, i.e., quality education in rural areas can significantly positively affect economic growth.

NOTES

[1] Korea in this paper refers to South Korea.
[2] Additional findings include that females' school attainment was not significantly related to the economic growth, which indicates the lack of job/career opportunities for females in many countries. Male's primary schooling was not significantly related to the economic growth, but primary schooling is pre-requisite to secondary schooling, thus it will affect economic growth indirectly. Female's primary schooling appears to stimulate economic growth by reducing fertility rate.

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REFERENCES

Barro, R. J. (2002). Education as a determinant of economic growth. In E. P. Lazear (Ed.), *Education in the twenty-first century* (pp. 9-24). Standford, CA: Hoover Institution Press.

Im, Y.-K. (2007). Issues and Tasks of Rural Education in Korea. Paper presented at the International Symposium on Issues and Tasks of Rural Education in Korea and Australia, Kongju National University, November

Im, Y.-K., Lee, T. –S., & Kwon, D. –T. (2007). Analysis of the educational gap between rural and urban areas. Kongju, Korea: Kongju National University, New University for Regional Innovation – Teacher Education Innovation Centre (NURI-TEIC).

Lyons, T., Cooksey, R., Panizzon, D., Parnell, A., & Pegg, J. (2006). *Science, ICT and mathematics education in rural and regional Australia:* Report from the SiMERR National Survey. Canberra: Department of Education, Science and Training.

McPhan, G., Morony, W., Pegg, J., Cooksey, R., & Lynch, T. (2008). *Maths? Why Not?: Unpacking reasons for students' decisions concerning higher-level mathematics in the senior years.* Report submitted to the Department of Education, Employment and Workplace Relations, March, pp.141.

Panizzon, Callingham, Wright, & Pegg. (in press). Impact of developmentally-based qualitative assessment practices in mathematics on school policies, classroom instruction, and teacher knowledge.

Panizzon, D., & Pegg, J. (2008). *Collaborative innovations in Rural and Regional Secondary Schools: Enhancing student learning in Science, Mathematics and ICT*. Report submitted ASISTM Curriculum Corporation. Podcasts of Teacher comments available at http://www.une.edu.au/simerr/Science/index.html.

Pegg, J., & Graham, L. (2005). The effect of improved automaticity and retrieval of basic number skills on persistently low-achieving students. In H. L. Chick & J. L. Vincent (Eds.), *Proceedings of the 29th Conference of the International Group for the Psychology of Mathematics Education* (Vol. 4, pp. 49-56). Melbourne, Australia: University of Melbourne. .

Pegg, J., & Graham, L. (2007). Addressing the Needs of low-achieving mathematics students: Helping students 'trust their heads'. Invited Key Note Address to the 21st Biennial Conference of the Australian Association of Mathematics Teachers, In K. Milton, H. Reeves, & T. Spencer (Eds.), *Mathematics: Essential for earning, essential for life* (pp. 33-46). Hobart: AAMT.

Pegg, J., Lynch, T., & Panizzon, D. (2007). *An exceptional schooling outcomes project: Mathematics*. Brisbane, Australia: Post Press.

THE POTENTIAL OF PLACE-BASED EDUCATION TO ENHANCE RURAL STUDENTS' EDUCATIONAL EXPERIENCE

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ABSTRACT

Effective and socially just education for rural students needs to enable these students to achieve their aspirations. Education should also contribute to building sustainable futures for rural communities. Place-based education has the potential to deliver a quality and engaging curriculum for rural students (Hass & Nachtigal 1998; Sobel 2004). The 'Special Forever' project (Murray-Darling Basin Commission and Primary English Teaching Association) is an example of a place-based program that has promoted literary and artistic responses to the local environment amongst students in the Murray-Darling catchment area. Anthologies of oral histories are an example of place-based focus on the cultural elements of the community. There are many examples of vocational education that provide secondary school students with opportunities to prepare to participate in local industries such as aquaculture or viticulture. Less likely to be developed is a literacy or numeracy curriculum that builds on the knowledge and abilities students have already developed in these learning areas and is valued locally outside the classroom. Instead it is more likely that the literacy curriculum becomes a colonising experience for students.

This paper will review some of the literature on place-based education and critique its potential to provide opportunities for the development of engaging curriculum and contribute to the sustainability of rural communities.

Keywords: ***Rural communities, place-based education, curriculum***

1. INTRODUCTION

Place-based education focuses curriculum on the local place and community as a means of engaging students in learning relevant to their lives. It can also be referred to as a pedagogy of place, experiential education, community-based education, education for sustainability, environmental education, vocational learning or service learning. Sobel explains:

> Place-based education is the process of using the local community and environment as a starting point to teach concepts in language arts, mathematics, social studies, science, and other subjects across the curriculum. Emphasizing hands-on, real-world learning experiences, this approach to education increases academic achievement, helps students develop stronger ties to their community, enhances students' appreciation for the natural world, and creates a heightened commitment to serving as active, contributing citizens. Community vitality and environmental quality are improved through the active engagement of local citizens, community organizations, and environmental resources in the life of the school. (Sobel, 2004, p. 7)

Students from rural areas come to school with worldviews different to that of much of mainstream society, and often with different aspirations (Poiner, 1990). Place-based education has a focus on what occurs in rural schools as does this paper, but with recognition that place-based education can also be the basis for education in other settings.

Sher & Sher (1994) were commissioned to review rural education in Australia. One point they highlight is the complexity of education in rural schools:

> Rural educators understand the necessity of preparing their students to succeed in the urban context (given that many students eventually migrate to a city). And yet, their students also must be equipped to be successful in the local rural context. There is an expectation that rural schools prepare their students to function well *biculturally*: as people who may move back and forth between city and country many times. By contrast, there is no expectation placed upon urban schools to prepare their students for anything beyond city life (p. 39).

Rural schools have an important role in the long-term sustainability of their communities. Young people in rural communities, particularly those who remain there, need to leave school equipped to solve problems as they arise. The importance of these skills is evident in Corbett's (2007) book, *Learning to Leave* reports about schooling in a fishing town in Nova Scotia where male students have left school early to earn large incomes in the fishing industry but where the curriculum has been focused on equipping students to leave the community. These fishermen were not able to seek changes to fishery management that would have ensured long term sustainability of the fishing industry. To achieve such changes would have required knowledgeable lobbying of the government, and thus effective use of a range of literacy skills.

Literacies in rural communities are perceived as being simple and limited in range. Lo Bianco and Lankshear (1997) in *Australian Literacies: Informing National Policy on Literacy Education*, include descriptions of the main literacy practices required in each tier of industry. For example:

> *Primary producers* are currently under increasing pressure to use advanced technologies to plan their work and to predict how certain choices will affect the success of their efforts. They use these technologies to communicate directly with national and international market places to ensure they have up to date information to conduct their activities with respect to stocking, land usage, buying and selling. New collaborative ventures among primary producers and economic and agricultural advisers, often spanning nations and continents and involving both government and non-government agencies, are increasingly important and rely for their success on sophisticated literate practices. (p. 3-4)

Many rural communities have businesses from each industrial sector, and thus a wide range of literacy practices are used by residents. Young people seeking employment in the community need to be able to use these literacy practices.

Place-based learning enables a range of students to achieve appropriate levels in literacy, numeracy, and in the academic curriculum according to research in the US evaluating learning outcomes for students in schools delivering place-based education. The Place-based Education Evaluation Collaborative (PEEC) in ten studies across the US, report in quantitative and qualitative measures of student learning and engagement with schooling (Duffin, Chawla, Sobel & PEER Associates, 2005). Evidence supports improvements in students' learning, including improvements in reading and maths scores, better performance in science and social studies, improved abilities to make connections and transfer knowledge from familiar to unfamiliar contexts, declines in discipline problems, and opportunities to learn at a higher level are substantiated by PEER data (Duffin, Chawla, Sobel & PEER Associates, 2005).

Many rural communities face difficult futures, and are fighting for viable and sustainable futures. Black (2005) defines sustainability as society being able to persist over generations with

sufficient far sight and flexibility to not undermine its physical or social foundations. The use of the term 'flexibility' here emphasizes that a sustainable society or community is not static, but rather is adaptable when social or physical resources are damaged or depleted, new resources become available, or government policies or market forces change. Rural communities in Australia are under stress due to climate change and globalization reducing profitability for many primary producers, with impact flowing to other businesses. Declining profits and declining population leads to decreasing service requirements and reduced school size. These changes contribute to an increased focus on the need to leave the rural community and a view, especially among young people, that what is outside the community is better than exists within the community (Haas & Nachtigal, 1998).

Observations of rural communities and sustainability issues lead me to conclude that if schools are to assist the sustainability of rural communities then schools need to equip rural students in a range of ways. Students need to be:

- Appropriately literate, and able to develop new literacy practices
- Prepared to be active citizens, able to contribute to and work for change
- Flexible, innovative and creative thinkers
- Prepared to work to achieve new aspirations as life's circumstances change, expecting the best of themselves and able to work to excel
- Prepared for further study and careers
- Compare favourably with other students, through a socially just education that equips them for destinations they and their families aspire to
- Competent critical and higher order thinkers.

To achieve these outcomes is to place significant demands on rural schools and requires a quality curriculum.

National curriculum documents usually seek to ensure students will progress through a range of learning outcomes with set achievements at particular ages or year levels of schooling. There is a different focus in the Norwegian national curriculum which seeks to incorporate place-based education (Royal Ministry for Education, Research and Religion, 1999). While the basis is students learning common knowledge, culture and values, there is an emphasis on adapting education through the practical and concrete. There is a call for students to be familiar with their local environment, social and biological, with the proportion of learning that is based in the local community commencing at 60% in the first year of school, reducing to 40% of the curriculum in Year 10. Local content is to be integrated into the curriculum through cooperation by the school with organizations and institutions in the local community. These organizations and institutions can provide learning materials and give opportunities for participation, activity and responsibility (Royal Ministry for Education, Research and Religion, 1999). While other national curriculum documents do not specify local input and strong community connections, where the local community is identified as an important resource for students' learning it can be included.

2. PLACE-BASED EDUCATION LITERATURE

In this section Toni Haas and Paul Nachtigal's (1998) *Place Value,* David Sobel's (2004) *Place-Based Education,* and David Gruenewald and Gregory Smith's work on place and place-based

education are discussed. Some examples of place-based education from Australia are then outlined.

Place Value – Toni Hass & Paul Nachtigal

Place Value (1998) is five short essays on living well ecologically, politically, economically, spiritually, and in community (with accompanying annotated bibliographies). Haas and Nachtigal propose that students need to understand the importance of community and learn they are able to make a difference in the community, know they can act, and learn to participate in their community. A suggested starting point is consideration of the purpose of education, particularly in relation to the community. The argument for place-based education is based on the connections rural people have with each other and the place where they reside. Annotated bibliographies include literature about each aspect of living well in one's community.

Place-Based Education – David Sobel

Sobel (2004) reconceptualises and broadens the base of environmental education into place-based education. This includes a focus on sustainability, advocating for an integrated curriculum, engaging students through a curriculum that is developmentally appropriate and relevant and that is informed by the local social or cultural landscape. The book explains place-based education and its benefits. Examples indicate the diversity of possibilities for place-based education but the challenge is converting this information into an Australian social and educational landscape where there are fewer organisations to support innovative education programs.

When implementing place-based education, Sobel advises that the school should:

1. have an environmental resource person in the school
2. establish a team of people who will guide the develop and implementation of the new approach
3. build connections through community action forums
4. tread lightly with the focus on the environment to avoid opposition or fear in the community
5. nurture continuous improvement in teachers through ongoing professional development
6. nurture community exchange – showing student work, and involving community members and community groups in delivering the curriculum.

Smith on learning to 'be where we are'

Smith (2002a, p. 30) explains that place-based education 'adopts local environments - social, cultural, economic, political, and natural - as the context for a significant share of students' educational experiences.' He also explains that the 'primary value of place-based education lies in the way it serves to strengthen children's connections to others and to the regions in which they live' (2002b, p. 594). Then students are able to engage with learning that connects to their lives, and things of interest to them, rather than focusing on developing interest in things beyond their lives (2002a, p. 30). In each article Smith provides examples of students engaged in place-based education that involves them in environmental and scientific work for real-world problems. The students are active, spending time outdoors, making decisions, and co-creating knowledge with their peers and teachers.

Gruenewald on place and a critical pedagogy of place

Gruenewald (2003a) in 'Foundations of place' is seeking a better framework and focus for curriculum in schools and concludes that removing barriers between schools and communities will contribute to improvements in schooling, leading to a curriculum that will equip students for their future lives as a result of better connections with, and understanding of, place. He also suggests that place-based education links to purposes of schooling currently neglected. In this way place-based education can be both authentic and engaging for students, avoid a narrow provincialism or localism, and contribute to living in place better.

Gruenewald (2003b) sees place-based education and critical pedagogy as mutually supportive and proposes a synthesis to give a critical pedagogy of place. He calls for a move from education that values individualistic, quantifiable and statistically comparable outcomes, to relevance to the lives of students and their communities. The practices and purposes of place-based education can be connected to experiential learning, contextual learning, problem-based learning, constructivism, outdoor education, indigenous education, environmental and ecological education, bioregional education, democratic education, multicultural education, community-based education, critical pedagogy itself, as well as other approaches that are concerned with context and the value of learning from and nurturing specific places, communities, or regions. (Gruenewald, 2003b, p. 3)

Gruenewald has two objectives, in linking the school with the landscape both culturally and ecologically: decolonization and reinhabitation. That is, students act on two aspects of their surroundings, the social environment and the natural environment. Children can be better at decolonisation as they have the imagination to think things can be done in other ways, and use the voice of the less powerful.

Tertiary students learning to value the culture of their local place

An example of place-based education for tertiary education is outlined in the final chapter of *Rural Literacies* (Donehower, Hogg & Schell, 2007). The authors see many benefits in rural students and communities valuing the rural, and valuing what they bring to their studies at school and in tertiary studies. While tertiary students are not located in the physical places that nurtured them as young people, they can engage in writing that creates social, cultural and material realities experienced in those places together with the associated identities, and work with issues that are challenging the sustainability of these places. Through these activities students are encouraged to recognise the critical literacy and authority they bring to their academic work as a result of their rural experiences, particularly through their different ways of defining valuing and practicing literacy (p. 155). Donehower et al. (2007) suggest students can become more confident to engage successfully with academic work when they value their literacies, and are able to critically reflect on their own literacy practices compared with those that seem more valued.

3. AUSTRALIAN EXAMPLES OF PLACE-BASED EDUCATION

Of the three Australian examples the first is a research project that extends place-based work commenced in 1993. The following two examples are Australian picture books that can be used as scaffolds for place-based education**.**

Literacies in Place

'Special Forever', a joint project between the Primary English Teaching Association and the Murray-Darling Basin Commission (MDBC), commenced in 1993 as part of a program to raise community awareness of issues in the Murray-Darling Basin among the younger population. Due to the project's popularity it has continued well beyond the initial plan of two years. An anthology published each year comprises selections of students' short stories, poetry and artwork. Analysis of published texts shows students produced a range of text types, located in literacy, English, conservation, tourism and recreation, history, family, industry-agriculture, geo-science, indigenous, and industry-other (Cormack, et al, 2006).

The project 'River Literacies', conducted by literacy researchers and focused on place-based education, was instigated to raise the quality of the literacy and environmental teaching of the 'Special Forever' project (Cormack, et al, 2006). The resulting publication, *River Literacies*, (Comber et al 2007a) identifies five principles from Smith (2002b), to guide teachers developing place-based studies with an environmental focus:

1. Start with research about subjects that matter to students and their community
2. Build conceptual and knowledge resources over an extended period of time
3. Work in the 'field' and document those experiences
4. Introduce students to a range of genres, media and communications technologies
5. Ensure time for the production and dissemination of student-produced texts (Comber, et al, 2007b, p. 17).

River Literacies reports on eight projects conducted in primary schools within the Murray-Darling Basin. These place-based education projects indicate students studied a variety of environmental topics such as birds, weeds, endangered animals, water quality, a bridge (environmental and engineering), river health, and sustainable waste disposal. The students observed, collected, measured, assessed, reported, shared with other schools, constructed posters and reports, advised new natural resource management personnel appointed to the area, and learnt from semi-retired members of the community who visit their school regularly. Some schools' students used the media, print and radio, to inform the community of their monitoring work and their concerns.

Papunya School Book of Country and History

This book was written by members of the Papunya community, located in central Australia, guided by Nadia Wheatley (2001) and illustrated with assistance from Ken Searle. The book was compiled as a curriculum resource for the Papunya School. It provides some of the ancient history and dreaming of the Papunya area, together with a history of the local area since white settlement. In particular it provides a history of the school and its vision for the future. The focus of the book is the cultural life of Papunya and the Papunya School, amongst people who have become famous for their artwork. Other schools could use this text as a template for a book about their school and community with assistance from parents and members of the wider community. A project of this type would engage students in learning that covers each of the learning areas of the curriculum.

Going Bush

Going Bush was developed as a Harmony project to guide students to experience harmony with the local environment, with each other, the community, and the original custodians of the land. This book is also authored by Nadia Wheatley (2007) and illustrated by Ken Searle. This book has two main foci: the first, to take students into an area of local bush near their school to explore the landscape, vegetation, and fauna; and secondly, to have students understand and appreciate the original Aboriginal inhabitants and their knowledge of the local area. The students featured in the book engage in constructing maps, drawing what they observe, conducting research and writing about their experiences. *Going Bush is* offered as a resource and template for establishing similar activities in a school's local area.

4. WAYS FORWARD WITH PLACE-BASED EDUCATION

Place-based education offers a range of benefits for rural students and rural schools. Authentic tasks with a foundation in the life of the local community are going to be engaging for students, help them to understand their social context and the array of influences acting on their community. US research shows that students can reach improved levels of academic achievement. Students who have gained skills and abilities that will equip them to be innovative problem-solvers will be valuable community members in the future, while strong links between the school and the local community will benefit rural schools in many ways now. Place-based education has much to offer our rural schools.

REFERENCES

Black, A. (2005). Rural communities and sustainability. In C. Cocklin & J. Dibden (Eds.), *Sustainability and Change in Rural Australia* (pp. 20-37). Sydney, NSW: UNSW Press.

Comber, B., Nixon, H., & Reid, J.-A. (Eds.). (2007a). *Literacies in place: Teaching Environmental Communications*. Newtown, NSW: Primary English Teaching Association.

Comber, B. M., Reid, J.-A., & Nixon, H. (2007b). Environmental communications: Pedagogies of responsibility and place. In B. M. Comber, J.-A. Reid & H. Nixon (Eds.), *Literacies in Place: Teaching Environmental Communications* (pp. 11-23). Newtown, NSW: Primary English Teaching Association.

Corbett, M. J. (2007). *Learning to Leave: The Irony of Schooling in a Coastal Community*. Halifax, Newfoundland, Canada: Fernwood Publishing.

Cormack, P., Green, B., & Reid, J.-A. (2006). *River literacies: Discursive constructions of place and environment in children's writing about the Murray-Darling Basin*. Paper presented at the Sense of place Conference. Retrieved July 15 2008 http://www.unisa.edu.au/hawkeinstitute/cslplc/documents/Cormack%20Green%20%20Reid%20River%20Literacies%20-%20Senses%20of%20Place.pdf

Donehower, K., Hogg, C., & Schell, E. E. (2007). Toward a sustainable citizenship and pedagogy. In K. Donehower, C. Hogg & E. E. Schell (Eds.), *Rural Literacies* (pp. 1-36). Carbondale, IL: Southern Illinois University Press.

Duffin, D., Chawla, L., Sobel, D., & PEER Associates. (2005). Place-based Education and Academic Achievement. Retrieved October 19 2008, from http://www.peecworks.org/PEEC/PEEC_Research/S0032637E

Gruenewald, D. A. (2003a). Foundations of place: A multidisciplinary framework for place-conscious education. *American Educational Research Journal, 40*(3), 619-654.

Gruenewald, D. A. (2003b). The best of both worlds: A critical pedagogy of place. *Educational Researcher, 32*(4), 3-12.

Haas, T., & Nachtigal, P. (1998). *Place Value: An educator's guide to good literature on rural lifeways, environments, and purposes of education*. Charleston, WV: ERIC Clearinghouse on Rural Education and Small Schools.

Lo Bianco, J., & Freebody, P. (1997). *Australian Literacies: Informing National Policy on Literacy Education*. Belconnen, ACT: Language Australia.

Papunya School, & Wheatley, N. (2001). *Papunya School Book of Country and History*. Crowns Nest, NSW: Allen & Unwin.

Poiner, G. (1990). *The Good Old Rule: Gender and Other Power Relationships in a Rural Community*. South Melbourne, Vic: Sydney University Press in association with Oxford University Press.

Reid, J.-A., Nixon, H., & Comber, B. (2007). Teaching for environmental sustainability: Combining critique and hope. In B. Comber, H. Nixon & J.-A. Reid (Eds.), *Literacies in Place: Teaching Environmental Communications* (pp. 146-158). Newtown, NSW: Primary English Teaching Association.

The Royal Ministry of Education Research and Church Affairs. (1999). *The Curriculum for the 10-Year Compulsory School in Norway*. Oslo, Norway: National Centre for Educational Resources.

Sher, J. P., & Sher, K. R. (1994). Beyond the conventional wisdom: Rural development as if Australia's rural people and communities really mattered. *Journal of Research in Rural Education, 10*(1), 2-43.

Smith, G. A. (2002a). Going Local. *Educational Leadership, 60*(1), 30-33.

Smith, G. A. (2002b). Place based education: Learning to be where we are. *Phi Delta Kappan, 83*(8), 584-594.

THE HOT TOPIC COMMUNITY: VIDEOCONFERENCING TO REDUCE THE PROFESSIONAL ISOLATION OF TEACHERS IN RURAL WESTERN AUSTRALIA

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ABSTRACT

Access to quality professional learning and the opportunity to collaborate with other educators can be limited for teachers in rural and remote areas of Western Australia. A recognised need to enhance the skills of rural teaching professionals and encourage teachers in small communities to join collegial networks was established by the members of several professional organisations. A working group consisting of representatives from the Australian College of Educators-WA (ACE-WA), the Rural and Remote Education Advisory Council (RREAC), the Society for the Provision of Education in Rural Australia (SPERA) and the School of Isolated and Distance Education (SIDE) provided teachers in rural areas with the opportunity to reduce professional isolation through the provision of relevant, convenient, and cost effective in-service education. Through a videoconferencing system, accessed within the Western Australian Telecentre Network and other educational organisations, the audience connected and participated with the presenter and studio based audience for two *Hot Topics Seminars* in 2008. This paper reports on the challenges and successes encountered by the working group and the findings of the research conducted throughout 2008.

Keywords: ***enhancing skills, professional learning, reducing professional isolation, rural and remote teachers, ICT***

1. INTRODUCTION

Teachers in rural and remote areas of Western Australia are often faced with limited access to quality professional learning opportunities. A significant number of teachers are employed within the Department of Education and Training (WA), where specific programs are established that employ teachers for rural and remote teaching positions. The Remote Teaching Service encompasses 43 schools in very remote locations and employs 341 staff including administrators. Many of these remote locations provide an extremely challenging work environment and lifestyle experience. The schools are often located up to 2000km from the nearest district education office and the communities are predominantly of Aboriginal population. A rural placement is attributed to schools outside of the metropolitan area, these consist of 318 schools and employ 5259 teachers including administrators. The Catholic Education Office (CEO) and members of the Association of Independent Schools of Western Australia (AISWA) also have a significant number of schools in regional locations, and are keen to implement strategies to attract and retain teaching staff to regional locations.

Previously, a commitment to promoting a positive view of education and training in regional and remote areas has been demonstrated through the individual initiatives of Australian College of Educators-WA (ACE-WA), Rural and Remote Education Advisory Council (RREAC),

Society for the Provision of Education in Rural Australia (SPERA) and the School of Isolated and Distance Education (SIDE). This has been done by supporting and encouraging rural communities and educators to work towards the provision of quality education and training; and by providing a framework for the sharing of concerns, issues and experiences relating to education and training. Furthermore, educational research and development has been of utmost importance to inform the practices of these associations.

2. BACKGROUND

Hot Topics was originally created in 2007 by Dr Simon Clarke (University of WA) and Alec O'Connell (University of Notre Dame), committee members of the Australian College of Educators in Western Australia. The concept involved presenting a selected range of issues by appropriate speakers with expertise in each of the areas. Speakers were invited to present a point of view and lead a discussion. A series of topical professional development seminars were designed to provide an opportunity for members and non-members to get together on a regular basis. The idea was to present topical issues that could be debated and critiqued in a comfortable and non-threatening forum. It was decided that ACE-WA would run approximately six within the first year, at a central location and provide refreshments to encourage collegiality and networking. Starting times were arranged to suit educators finishing the day's work, provide afternoon tea and an hour to engage in the topic being presented.

The first year was extremely successful, easily promoted and efficiently co-ordinated which encouraged the committee to continue the series again in 2008. The difference in 2008 was the creation of a partnership with other organisations to provide access to members and non members with regional locations (E.Blake, personal communication, August 15, 2008).

The provision of high quality, rigorous, relevant professional learning opportunities that encompass the best professional guidance and foster the building of local and statewide professional learning communities has been a common goal for all four organisations. In response to this, an informal discussion resulted in a successful partnership that provided the vehicle to deliver quality, structured, cost effective, locally accessible professional learning that addressed the identified need to provide PD in rural and remote areas.

Key personnel included the President of ACE-WA, the Director of RREAC, technical staff within SIDE, the President of SPERA and a representative from Curtin University. These key people joined together with the intent of ensuring that teachers located in rural and remote regions of Western Australia had equitable access to the Hot Topic professional learning opportunity that were provided to their colleagues in metropolitan areas. The need to be proactive in responding to the rural membership base of a number of education associations was brought about by a partnership that demonstrated a common focus on regional and remote education.

3. AIMS OF THE RESEARCH

The main aim of the research was to document the vision of the partnership, the procedures undertaken to deliver professional learning at a distance and the challenges and successes encountered by the partnership.

4. METHODOLOGY

The presentation of two quality, cost effective "Hot Topics" seminars were planned for delivery via videoconferencing technology. This initiative was undertaken to address a need for professional learning and networking between educators in regional and remote locations in Western Australia. A mixed methods research approach was used to collect quantitative and qualitative data.

Quantitative data were collected through surveying participants to ascertain their perceptions of their direct experiences in participating in "real time", face-to-face video conferencing professional learning. The survey comprised two parts:

- Part A asked for demographic information;
- Part B sought information on the opportunities presented through the seminar.

From the participant surveys, the data was analysed and key themes emerged. These themes became the categories for further investigation and qualitative data were then collected by open ended questionnaires emailed to the regional co-ordinators and partnership members. The participant survey feedback and recommendations from the regional co-ordinators were analysed and used to inform and improve the delivery of the second seminar.

From the participants (n=110) in attendance at Seminar One directed at the syllabus in early childhood education practice, a total of 44 responded to the survey instrument. This indicated a response rate of 40%. It is imperative to note that 48% of respondents nominated a regional location as their current teaching region, exemplifying that the data from Seminar One were evenly reported from a rural and metropolitan context. From the participants (n=37) at Seminar Two discussing the law and education, a total of 16 responded to the survey instrument. This signifies a response rate of 43%. In relation to their current teaching region, the data from Seminar Two was recorded as 40% of survey respondents' living in a rural context.

5. FINDINGS

The key themes that emerged from the qualitative data were technology challenges, quality of professional development content, future professional development needs and networking and collegiality aspects. These findings are significant and have been previously reported (Boyd, Broadley & Terry, 2008), however the foci of this paper is to discuss the challenges and successes encountered by the partnership group.

Variation Between Seminars

Hot Topic Content

The content in Seminar One addressed the topic of "Examining early childhood practice in relation to the new K-10 syllabus". The presenters aimed to highlight the importance of safeguarding high quality practice for the youngest students in our education system and encouraged early childhood practitioners to critique whether the document was applicable to their teaching context. Seminar Two was entitled "How the Law Impinges on the Classroom" and discussed the issue of privacy and confidentiality of information in schools, with reference to some recent cases studied and how schools can implement effective legal risk management in this area.

Location of Participants

The locations involved in the videoconferencing seminars included Perth (located in Leederville in the SIDE Studio with overflow broadcast to a Workshop Room); Albany (located 409 kms from Perth); Wyndham (located 3231 kms from Perth); Esperance (located 701 kms from Perth), Manjimup (located 307 kms from Perth) and Bunbury (located 180 kms from Perth). The vast distances in Western Australia are highlighted in Figure 1.

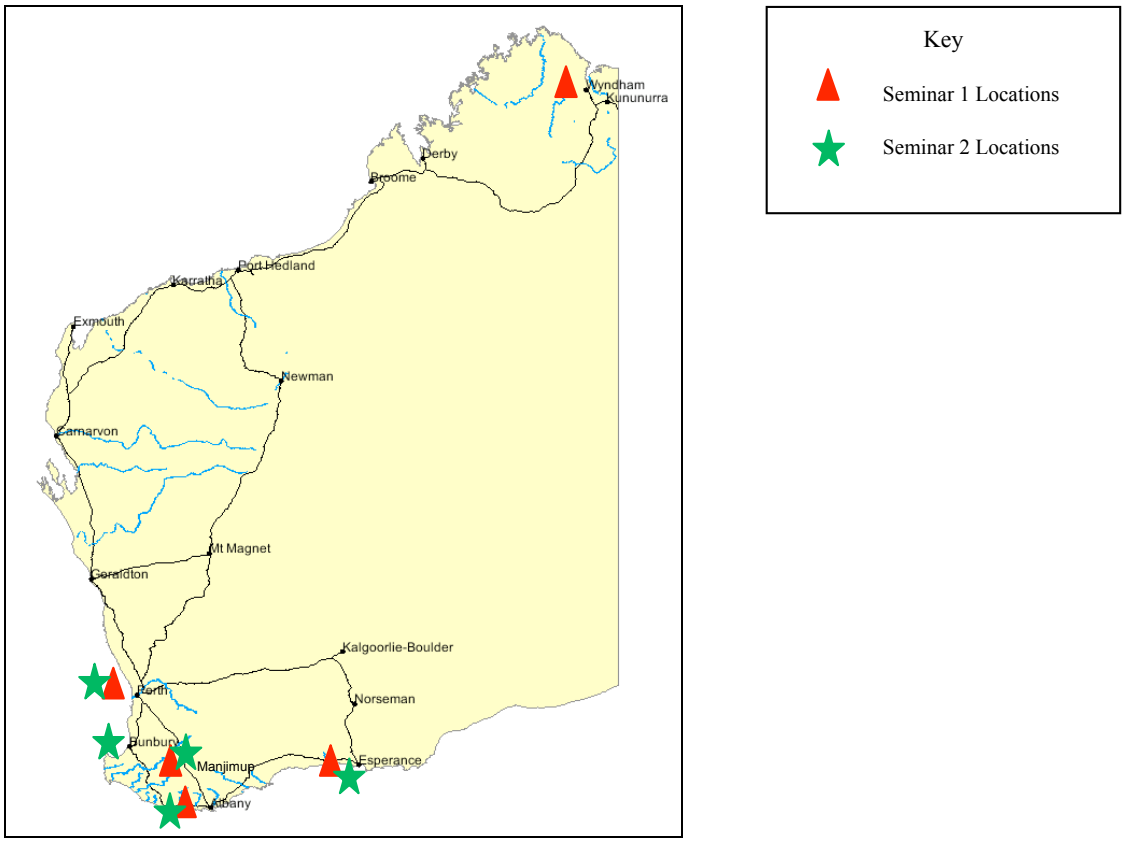

Figure 1: Map Depicting Location of Participants

The participants were educators from the areas of early childhood, primary, secondary and tertiary education. Table 1 depicts the number of participants that attended at each location for both seminars.

Table 1: Location and Number of Participants

Location	Seminar 1 Attendees	Seminar 2 Attendees
Albany	22	4
Bunbury	-	4
Esperance	15	7
Manjimup	7	-
Perth	60	22
Wyndham	6	-
TOTAL	110	37

The total number of attendees varied significantly between both seminars and can be explicitly linked to the content of the professional development opportunity. This is discussed further in the challenges section of this paper.

ConferWest, located in West Perth, is a whole of government video conferencing bridging service that provides conference bridging services for government and not-for-profit organisations. Through the studio at SIDE, managed by WestOne and located in Leederville, a video link was established with ConferWest. The Multipoint Conference Unit (networking device) allowed multiple remote video and telephone sites to participate in the professional learning seminar via a single conference call that combined audio, data and video. The video conferencing technology is based on international ISDN and Video Over IP communication standards (Department of Treasury and Finance, n.d.). A conceptual display of the technology connections are presented in Figure 1. From Seminar One it was evident that some audio technical difficulties were encountered with videoconferencing through the studio location. In Seminar Two the working group made the decision to remove the studio from the videoconference network and position the presenter and Perth audience directly into the workshop room.

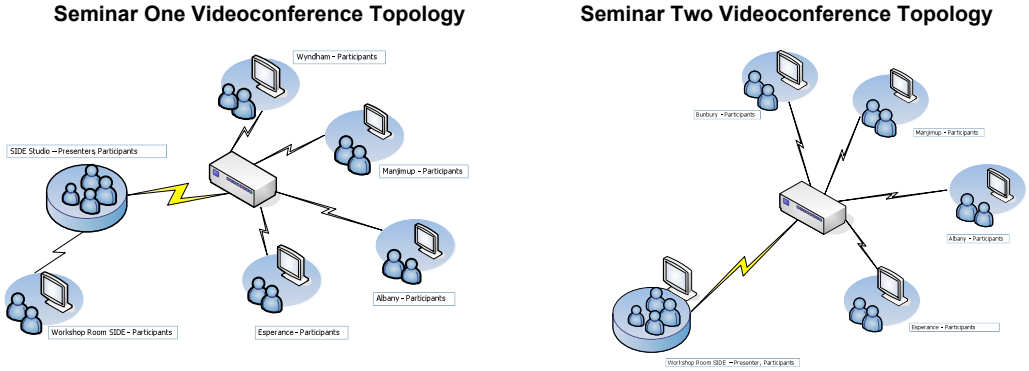

Figure 2: Different Videoconference Networking Between Seminars

6. SUCCESSES OF THE INITIATIVE

Engaging Rural and Remote Educators

Access to professional learning opportunities is of great concern to many educators living in rural and remote locations. This project enabled a very successful series of seminars to be delivered by videoconference to educators who would usually not have been able to access them. From the data at Seminar One it was found two teachers travelled to Perth from Bunbury (360km round trip), these teachers were identified as being interested in co-ordinating a session within their regional area. This became the catalyst for Bunbury to join the videoconference connection for the second seminar. Data collected from a regional location indicated that one participant in the second videoconference connection had been a member of the Australian College of Educators for 15 years and had not attended any ACE-WA professional development opportunities due to being a regional member. This data demonstrates the benefits in using technology to provide equitable access and engage rural and remote educators in professional learning with their city counterparts.

Response to Participant Feedback

The data collected from Seminar One participants' was analysed and became an integral part of the planning process for Seminar Two. The regional co-ordinators were asked to provide recommendations for further seminars and these were also used for improvement. Examples

included methods of broadcasting the event, registration of attendees, connection times and instructions for troubleshooting the videoconferencing units. The working party responded to each recommendation and ensured they were included in further planning sessions.

Initiation of Networks at the Local Level

A variety of educators working within private and government school sectors attended the seminars. Through the opportunity presented to rural educators to engage in collegial networking, a number of locations considered the notion of forming regular networking. From the data, a participant in the Warren-Blackwood Education district wrote: "Regular ECE network meetings - one a term- were agreed upon at our meeting with a different school hosting each term. A positive outcome." Similarly a participant from Albany Education district stated: "Good opportunity, I thought I might start an ECE network after this, it was a good opportunity to get together these teachers."

Collaboration and Commitment from Partner Organisations

The vision of the partnership was to provide rural and remote locations access to quality professional learning opportunities. In order for this to be successful, the commitment from key people within the partner organisations was vital. The commitment consisted of an initial planning meeting, three meetings prior to Seminar One, three meetings prior to Seminar Two, attendance at both videoconference seminars and a debrief meeting at the completion of the project. This involved approximately 20 hours of voluntary time per person. This collaborative time equaled approximately 120 hours. Additionally, each key person were delegated further roles such as liaising with regional co-ordinators, sourcing suitable videoconferencing facilities and catering for the metropolitan members.

7. CHALLENGES OF THE INITIATIVE

Key People in Co-ordination Roles

This research established that the successful implementation of an initiative such as this was highly dependent on the co-ordinator role within the rural and remote locations. The task of identifying someone willing to take on a voluntary role to organise advertising, locate a suitable venue, trial the technology link up and source catering proved difficult. The opportunity for a rural centre to participate was based on the availability of such a person; hence this governed or restricted the rural locations that participated within this initiative. Over time, the partnership will build a network of coordinators and this challenge could diminish.

Catering to Specific Professional Learning Needs

The relevance or the importance of the topic at a particular point in time has been identified as a challenge. The size of the rural audience varied considerably between the two topics. While both the hot topics covered very important aspects of education, there is an argument that for the classroom teacher in the bush (often early in their careers and often coming to terms with living in very different environments) they need professional learning "for survival" – information and skills that have instant application. This leads to the challenge of knowing what rural teachers needs are in terms of professional learning. This is also related to audience critical mass. In larger centres, a range of topics can be offered and while numbers attending will vary, it is possible to gain enough participants to cover costs. In smaller centres, the risk of smaller

numbers (unless the topic is highly relevant) can result in smaller numbers and marginal cost issues. This is especially relevant for voluntary organisations.

Technology Challenges

One week prior to each video link up, a trial session was held to ensure any technical issues could be addressed. For Session One, a decision was made to use the studio room to provide a professional delivery of the videoconference. A number of technical issues occurred within this session, audio problems were encountered for some rural locations and although rural locations could see the presenter, the presenters and studio audience were unable to see the participants at other locations. Predominantly, the benefit of using videoconferencing is to be able to synchronously view the participants involved within the conference. A decision was made by the working group to use the Polycom within the workshop room to provide an image of each audience. This topology can be seen in Figure 2. This method of networking proved to be more successful; however, a technology glitch with the presenters Powerpoint file was encountered. The presenter was indicating to a technician when to broadcast the Powerpoint slides, however this was not able to be viewed by either the local workshop audience or the regional areas. This Powerpoint file was emailed to all regional centres after for their reference. The second seminar provided far more networking and collegiality as each audience were able to view the questions and comments from participants.

Access to Venue with Videoconferencing

Finding a cost-effective venue with videoconferencing equipment was a significant challenge to the working group. In some large regional centres, the co-ordinators were faced with no videoconference facilities or were available with cost and time restrictions. This was encountered in Busselton, a thriving regional centre with a population of 27,500, where the only videoconferencing available was at the Busselton Magistrates Office. This venue was not cost effective for the predicted number of attendees as described by the regional co-ordinator: “The courthouse usually closes at 4.30pm. As this is afterhours it will cost $49 per hour and we will have to pay for a minimum of 3 hours, making the total $147, not including the $64 booking fee. There is also an additional payment of $180 per hour if we have to dial out to you from there.” After discussions with many local government agencies and education organisations in the town of Busselton, it was decided by the co-ordinator to advise local attendees to travel to Bunbury (52km north) to join the video linkup. The regional co-ordinator in Bunbury encountered a similar situation in sourcing a venue. Facilities were available at Edith Cowan University in Bunbury but policy restrictions intended them for employee use only. The South West Regional College of TAFE eventually became the venue for the Bunbury/Busselton link up at a cost of $132 for the first hour and $66 per hour after or part of. A total of 4 educators who were non-ACE members from the Bunbury/Busselton region attended the seminar at $20 per person. This indicates the importance of the financial support from the partner organisations.

Partnership In-Kind Support

As with many voluntary positions, challenges are encountered with time, energy, planning and facilitation by people who also are employed in fulltime positions. The partnership worked collaboratively to facilitate and co-ordinate two seminars that included rural locations. Although the working group believed the planning roles were evenly distributed, there is a need for all partner organisations to be equal stakeholders in every aspect. The cost to participants to attend was set at $10 for ACE members and $20 for non-ACE members. It was noted that members of other organisations were not recognised with a discounted registration fee. Funds collected from

the seminars offset costs for ACE but other costs were picked up by RREAC – e.g. the cost of bridging and hire of the SIDE venue. In order to ensure further successes in delivery such initiatives to rural areas there would be a need to source sponsorship opportunities.

8. CONCLUSION

While challenges were encountered with using videoconferencing to connect the professional learning community of educators; the successes clearly outweigh the challenges experienced.

The ACE/RREAC/SIDE/SPERA partnership is now committed to building on this professional learning program to deliver a range of modules based on feedback gained from participants, coordinators, presenters and organisers. Information gathered will provide the basis for ongoing improvement.

The importance of partnerships is reinforced within Recommendation 10 of the national survey conducted by the National Centre of Science, ICT and Mathematics Education for Rural and Regional Australia (SiMERR):

> "….education authorities in partnership with schools and school communities, universities and professional organisations meet the continuing professional development needs of teachers through a range of strategies that ensure equitable access to ongoing professional learning….." (Lyons, Cooksey, Panizzon, Parnell & Pegg, 2006, p. xiii)

This paper has provided a snapshot of the partnership's vision to improve access to quality, cost effective professional learning for educators in regional and remote Western Australia. The challenges and successes encountered by the working group in order to use videoconferencing as a vehicle to deliver quality, structured, cost effective, locally accessible professional learning have been outlined. The identified need to provide equitable access for teachers in rural and remote areas is of extreme importance to the members of the partnership and further initiatives are within the planning stages.

ACKNOWLEDGEMENTS

This initiative involved in-kind contributions from the Australian College of Educators-WA (ACE-WA), the Rural and Remote Education Advisory Council (RREAC), the Society for the Provision of Education in Rural Australia (SPERA) and the School of Isolated and Distance Education (SIDE). Many thanks to RREAC for the provision of funding.

REFERENCES

Boyd, D., Broadley, T. & Terry, E. (2008, in press). Connecting with hot topics: streaming professional development to regional and remote Western Australia. In *The face of learning* (Proceedings of the annual conference of the Society for the Provision of Education in Rural Australia).

Department of Treasury and Finance (n.d.). *Office of shared services: Innovative business solutions.* Retrieved June 1, 2008, from http://www.oss.wa.gov.au/portal/page/portal/oss/home/services/Online_Services/ConferWest/Services

Education Workforce Initiatives Taskforce. (2008). *Education Workforce Initiatives: Report "If you think education is expensive..."* Perth, Western Australia: Government of Western Australia.

Herrington, A. & Herrington, J. (2001). *Web-based strategies for professional induction in rural, regional and remote areas.* Proceedings of the Australian Association for Research in Education (AARE) Conference. Fremantle: AARE. Retrieved March 20, 2008, from http://www.aare.edu.au/01pap/her01711.htm.

Lyons, T., Cooksey, R., Panizzon, D., Parnell, A. & Pegg, J. (2006). *Science, ICT and Mathematics Education in Rural and Regional Australia: The SiMERR National Survey.* DEST: Canberra.

Sharplin, E. (2002). Rural retreat or outback hell: Expectations of rural and remote teaching. *Issues In Educational Research*, 12(1), 49-63. Retrieved April 6, 2008, from http://education.curtin.edu.au/iier/iier12/sharplin.html

DEVELOPING A SCIENCE CHALLENGE TO SUPPORT PARTNERSHIPS AND PEDAGOGY IN RURAL AND REGIONAL SCIENCE

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ABSTRACT

In 2007 the researchers decided to investigate the development of a "science challenge" as a means of engaging students in science. They wanted to ensure that whatever was developed was sustainable, addressed the needs of students and provided some answers for the dilemma of equitable education in regional and rural areas. A literature search indicated that whilst science competitions were not new, one which was based on school-community partnerships and involved students in the solving of real problems, was quite different. This paper will report on the development of the science challenge with reference to the viewpoints of teachers, community and industry participants.

Keywords: ***science education, partnerships, engagement***

1. BACKGROUND

There is a crisis in the provision of scientists and engineers the world over (Barmby, Kind & Jones, 2008). University enrolments reflect the declining interest in science or engineering as a valid career path. This is similarly reflected in the number of secondary students engaging with school science in post-compulsory education. This has raised huge concern amongst educators, government and industry alike. Recent research (Lyons 2006; George 2006) indicates that school science needs to change and needs to change in ways which are meaningful to students. It is also accepted that a traditional emphasis on teaching science and mathematics as the transmission of abstract content fails to inspire the sort of innovation and creativity outlined in the Federal Government's paper *Backing Australia's Ability – Building our Future through Science and Innovation.* The call for more 'hands-on' teaching approaches in secondary school science and mathematics programs is a direct response to diminishing numbers of secondary students willing to pursue science and mathematics as a career.

In the last few years the Australian government (DEST) has supported the establishment of many school-community projects (ASISTM) at both primary and secondary levels which appear to be successful for the duration of the time of the project. A recent national forum "Charting Futures for Science, ICT, Mathematics Education in Rural and Regional Victoria" (Symington, Campbell & Tytler, 2008) called for closer links between schools, pedagogy, and community science resources to enhance opportunities for rural and regional students. Explicitly the Forum proposed the following recommendations:

Recommendations for action by Government

That Government develop a policy framework and funding base which will facilitate support for activity by schools systems, schools and universities to take appropriate action, including the actions proposed below, to ensure that schools are more effectively and appropriately able to develop the potential of students in rural and regional centres.

Recommendation for action by schools

That rural and regional schools explore ways of collaborating with community members and organisations and using community resources, human and material, in programs in science, mathematics and ICT.

Recommendations for action by researchers

Researchers should undertake research into rural education which takes account of their wider setting and news ways of approaching opportunities.

Researchers should collaborate with schools and school systems to investigate effective ways of identifying and measuring the outcomes of innovative programs.

Yet within the local community of science and mathematics educators there exists some shining examples of teachers and schools that inspire innovative and creative learning by encouraging students to learn science and mathematics as processes that are applied to solve real world problems. In these cases, science and mathematics education have much closer associations with learning as a research activity rather than traditional content transmission. Importantly, the emphasis on applying science and mathematics to solve real world problems links learning to the broader community, where the knowledge is valued for its creativity, innovation and contribution to society. In many of these cases of inspiring learning, the teachers and schools have responded to support offered by partnerships with industry, universities and community organisations. This project supports this view and is currently linking school science students with industry and community partners in the pursuit of authentic science.

As a means of celebrating the science learning, Deakin researchers have instigated a Science Challenge which allows students to report on their project at a science conference. Just like real scientists, students will be required to prepare a written report (which also becomes the teacher's assessment item), prepare and deliver a 10 minute presentation to conference delegates and to respond to a panel of judges.

This proposed science challenge has a number of purposes which are inter-linked. Firstly, it is anticipated to rejuvenate interest in science at secondary level through the completion of real science projects. Secondly, it is expected that strong links will be forged between school communities and industry partners that will provide ongoing support for the pursuit of science in the area. Thirdly, it will provide a forum for young scientists through which to develop skills of scientific investigation and share scientific discoveries. These aims will be pursued through the development of a science congress which will provide opportunities for students to link with a local scientific enterprise, undertake research and present results to others in a conference-like congress. It is expected that this proposed congress will provide schools and students who are attempting to undertake innovative and creative learning with a means of support and public recognition.

This research is driven by key questions:

- What work is being undertaken nationally & internationally to engage students in learning science through the use of challenges?
- What evidence exists to support the use of this approach as a strategy for teaching and learning science?
- What are the key features contributing to the success of such challenges?

2. LITERATURE REVIEW

An Australian national survey conducted in 2005 of 2940 teachers, 928 parents and students found significant disadvantage for rural schools and students in a number of different areas. The principal findings of this extensive research indicated that there was a high turnover of teaching staff (>20%) as well as huge difficulty (up to four times more difficult) in finding staff to fill positions, particularly in mathematics, science and ICT. Teachers in remote and regional areas were twice as likely to teach in an area for which they were not qualified. Teachers in regional and rural schools indicated a high unmet demand for professional development in all areas. Aspects such as mentoring, release time and collaboration with colleagues were not as available for rural and regional teachers. In addition, teachers, parents and students reported inequities in terms of the availability and quality of on-line access, access to technical assistance and support services, and resource provision (Lyons, Cooksey, Panizzon, Parnell & Pegg, 2006). The teachers believed that their students had a significantly higher unmet need for a broad range of learning experiences which included things like visits to educational sites, and alternative activities for gifted, talented and special needs students. Parents of children in rural and regional areas also believed that their children had fewer resources and learning experiences than their metropolitan counterparts (Lyons *et al*, 2006). There is clear data from TIMSS and PISA that rural and regional students are significantly disadvantaged in terms of learning outcomes (Pegg, 2005). There is clearly evidence of a "divide" with rural students disadvantaged when it comes to educational opportunities afforded their metropolitan counterparts. However, the disadvantage is not wholly one-way as community support in country areas can often alleviate other disadvantages (Pegg, 2008).

The idea of community support as a means of redressing disadvantage has been developing over a number of years. Many projects involving community-school partnerships in rural and regional areas around Australia have been successful and have provided new insight into the ways in which partnerships can be beneficial as a pedagogical tool. In particular, a report to the Australian Government (Tytler, Symington, Smith & Rogrigues, 2008) discussing the Australian School Innovation in Science, Technology and Mathematics (ASISTM) Project highlighted many benefits of community based learning. For example, the report highlighted that students found the science learning more meaningful and relevant. By linking science to students' lived experiences, students were more motivated and could understand the need for the science in the community. "The use of real world contexts and stories involving science and technology has been a key to engaging both boys and girls" (Fensham, 2006). In the ASISTM projects which linked students with Science or Community partnerships, students were often involved in cutting-edge science using material and resources which were unavailable in a school setting. The science knowledge that students gained was specific, purposeful and authentic to the needs of the project. In addition, teachers reported that for themselves, there was a level of professional growth through interacting with the project and community/science partners. Some even indicated a professional renewal in their area of science. Community-school partnerships can provide an endogenous transformation from old traditions into new practices.

In determining if the Science Challenge would be a meaningful and valid end-point to the students' research project, the literature on science competitions was surveyed. Searching through the literature proved to be a daunting and challenging task. Skimming through several hundred web entries for science fairs, challenges and competitions revealed several similar patterns. All science competitions were conducted within the school, often around a tightly prescribed set of competition guidelines. Students would use their teacher, school time and

some home time to complete a project which may include some research and construction. This would be submitted for a larger national competition. Often the student (or school) had to pay an entry fee. Another form of challenge consisted of a student or student team presenting to a venue for a series of on-the-spot problem-solving challenges. There was a limited time for solving the problem(s). Students who were successful at the local level, went on to compete in the national or international level. Often the science challenges were supported by local communities and industry, but the support was usually in the form of a dollar amount contribution. There does not appear to be any concerted effort to map the components which have led to a successful result, nor to provide a model for the establishment of successful partnerships.

The idea of a Science Challenge, based on students reporting on an authentic community-school science project, was quite unusual. Only one other example existed, in SE Asia, where developing nations were successful in changing the face of science education using authentic problem-based projects set in local environments and linked with local organisations.

3. METHODOLOGY AND METHODS

Our research methods are mainly qualitative, using interviews and surveys to develop case studies of the community-school projects. Through the case studies, we anticipate being able to illuminate the appropriate approach (or approaches) for successful engagement of students in community-school projects. The case studies will allow a critical appraisal of problem-based science education which is occurring in local situations.

Phase One of the project was established and completed in 2007. Funded by SIMERR (Science, ICT, Mathematics Education in Rural and Regional Areas-DOTARS), the project undertook a feasibility study by interacting with industry groups, local community groups and school staff to establish some simple working principles. Our approach was qualitative in nature, drawing on focus groups and interview discussions to collect the data. Initially invitations were sent out to twenty-eight industry and community groups around the Geelong region, asking for their involvement in a number of focus groups. The focus groups discussions occurred with Community participants from: Barwon Water; Water Watch; Parks Victoria; Weed Spotters; Lorne Landcare, County Fire Authority, Weed Warriors, Weed Busters & the Biotechnology industry. Two interviews of approximately 90 minutes each were conducted. At the conclusion of the Focus group discussion, an invitation was sent to all the secondary schools in the Geelong region, (approximately 20) requesting their attendance at a regional forum into the possibility of a Science Challenge. The regional forum was conducted to provide local teachers and industry partners with the outcomes of the literature search, community discussions and to gauge their interest in the proposed Science Challenge. Key questions addressed the perceived benefits and problems arising from the introduction of a science challenge.

Currently underway, Phase Two (January 2008 – December 2008) involves four schools in partnerships with local industry groups. The school students are undertaking research for the industry and have documented success in regional newspapers. This phase, funded by the Educational Futures & Innovation group within the Faculty of Arts and Education, will culminate with a regional presentation by students of their research at a Science Challenge Conference at Deakin in November, 2008. Schools, industry partners and the wider community will be invited to celebrate in the students' success.

4. DATA

National and International Science Fairs/competitions

The search for instances of academic papers referring to science fairs and their effectiveness, located only one recent paper. The authors, Yaşar and Baker (2003) state "… researchers generally agree that most of the articles written about the effectiveness of science fairs are based on opinion rather than research". Other papers were written in the 1980s and early 1990s, which partly explains the paucity of thorough research. Examples of overseas and national fairs and competitions indicate that many exist and follow a fairly rigid set of guidelines. None allows a truly interactive role for the student with the research problem, to be solved over a sustained period of time. Many science fairs are integrated with Maths, Technology or Engineering or any mixture of these tags.

Community/Government participants' responses

Barwon Water; Water Watch

- These groups had already experienced success with primary schools, but wanted to extend into secondary schools. They saw the Science Challenge as a way to do this.
- Their educational focus provided them with the understanding that the Science Challenge could help students focus on water conservation issues.
- They realised that the students could be a valuable resource in assisting with scientific data collection on the local waterways.
- They believed that the issues of water conservation provided valid challenges for the students

Parks Victoria; Weed Spotters; Weed Warriors & Weed Busters; Lorne Landcare

- Some of these groups already had some access to primary students and wanted to extend into secondary schools
- They noted that conservation and land issues are authentic problems which could be suited to student involvement.
- They felt that there was a real benefit for students to experience first hand some of the issues facing the local area

County Fire Authority

- The representatives from CFA commented on the opportunity for students to bridge the gap between science and local knowledge.
- They immediately identified a number of potential science-based research projects which would be within the students abilities and opportunity.
- They commented that the research would have an objective and real purpose.
- In addition, the CFA recognised that using secondary students could extend their current opportunities. They identified the students as resources.

Biotechnology representative

- Increasing students' awareness of science in the real world was valuable for the future

- Saw an opportunity for industry to have some influence with local schools and students
- Potential for students to relate to the growing biotech industry and see it as a possible career
- Student opportunities for involvement in an industry which is becoming more important locally

School teachers' responses

Group One – Year 9-10 teachers who participated

- Interested in the hands-on experience for engagement of students
- Potential for the development of professional learning for the teachers
- Linking with community had 'other' benefits
- Science becomes more meaningful when linking theory with practice.
- Students can work at their own level – opportunity to extend some students
- Teachers believed in applied learning as a middle years' strategy
- Science challenge could relate well with state curriculum documents

Group Two – Year 9-10 teachers who were unable to continue their involvement

- Their school did not have any way of timetabling such a prolonged activity
- Did not wish to commit additional time above the existing time given to science
- Could see the benefits for their students

It was clear from the discussion with each of the Community Focus Groups that there was significant support for the idea of a community-school science project which addressed the needs of the community groups but which added value to the science program. Each of the community groups represented could see benefits for their core community business whilst supporting educational needs of young people. Focus group participants identified a number of research possibilities, but also highlighted the importance of local knowledge, local networks and intergenerational understandings.

Interestingly, although the Science Challenge was initially offered to all middle years teachers, it was only Year 9-10 teachers who responded to the invitation. All commented on its value as an engagement strategy where the Science Challenge was a vehicle, rather than the main component, '…they respond much better if they can do something 'hands-on'. Initially, there was scepticism to the idea of secondary students having the capability to undertake real scientific problem-solving tasks. However, using the one example that existed in SE Asia, the scepticism was replaced by a realisation that there was a possibility that students could also undertake something a little more challenging. Teachers discussed their senior classes as they felt that they would benefit most from a closer link with real science projects. However, the pressure of the VCE curriculum left little opportunity for innovative practice. Further discussion noted that in fact, the content of the curriculum and related time constraints were significant in determining how many hands-on activities were undertaken. (Researcher's Notes, 12 December 2007)

Overall, there was general agreement between the community, industry and teacher participants about the benefits of the Science Challenge as a strategy to link theory with practice and

improving science learning. All expressed concern at the world-wide growing trend of the lack of interest in science and the connection that young people had with real world science. They felt that the Science Challenge would assist in addressing these issues.

Factors which influenced teachers' participation

Time

- All teachers commented on the restrictions of the school timetable which contributed to their lack of access to programs such as the Science Challenge. However four schools were able to participate in the challenge by approaching the school timetabler and giving sufficient notice for a change in timetable.
- Interestingly, the issue of time was also raised by the community organisations in terms of the availability of time of their volunteer staff to assist the students.

Resources

- Some teachers commented on the possible lack of resources required for participation in a valid science challenge. At this point, both the community participants and the biotechnology participant indicated that resources would be part of the partnership arrangement
- Additional comments were made about the opportunities for accessing quite sophisticated equipment through the local group of biotech industries who would be willing to assist.

Teachers' knowledge

- Some teachers expressed concern at their own lack of recent, relevant scientific knowledge. They felt that it may not be sufficient to support the students adequately.
- The teachers recognised that it would be a wonderful opportunity for them to update their own knowledge and saw the Science Challenge in terms of their own professional development

During the Forum, the issues were raised and two of them were immediately solved by the development of 'partnerships' between schools and community groups. The access to resources was solved through the generous assistance presented to schools by industry and community groups. Some of the resources offered included things like Atomic Spectrophotometers, Dissolved Oxygen meters and other such analytic equipment. The teachers' concerns over the currency of their knowledge were also addressed by the industry/community group suggesting that their expertise would be available to the teacher as well. The partnership would extend beyond the students' Science Challenge. This would ensure that teachers would not only be able to assist their students, but their own knowledge would grow.

The final issue raised by both the teachers and community partners, time, was much more difficult to resolve. Much of a teacher's time is outside of his/her control. The school structure takes precedence. However, four schools (moving into Phase 2 of the study) were able to influence their school's timetable to enable extended lengths of time for field and project work. For the remaining two schools (and teachers), 'time' and their inability to manipulate it for their own needs meant that they were unable to participate in the challenge.

5. DISCUSSION

All participants interviewed and surveyed as part of a focus groups or forum provided very positive commentary to the concept of a Science Challenge. For all participants, the perceived benefits outweighed any possible problems. Whilst some issues were raised, some solutions were also found through the development of partnerships. Four schools, through these partnerships, have been undertaking extended science projects as a result of these arrangements. It is quite clear that partnerships between the science teachers and the community/industry partners are essential for supporting the Science Challenge with specific knowledge and resources that would otherwise be unavailable to schools. Teachers report increased engagement in school, increased interest in science and a better understanding of the industry concerned.

At the point of writing, the Science Congress hasn't occurred and full data collection from that point of the research hasn't been undertaken. By the time of reporting to the ISFIRE Conference, preliminary analysis of the final data would have been completed.

6. CONCLUSION

We consider the original research questions:

- What work is being undertaken nationally & internationally to engage students in learning science through the use of challenges?
- What evidence exists to support the use of this approach as a strategy for teaching and learning science?
- What are the key features contributing to the success of such challenges?

There are a huge number of science competitions and fairs both nationally and internationally, however only one in SE Asia attempts to link students with community/industry partners in a mutually beneficial partnership. There is little research to indicate whether science fairs/competitions actually engage students, provide an alternative pedagogy to "school science" or in fact what elements may contribute to a broader science learning agenda. This is a strong indication that the further development of this research must address the question of the benefits of this approach.

The project has found that partnership arrangements between school and industry partners are appealing to both school and industry. However, neither group is skilled in setting up the arrangements, and special support, for instance by a university or community based body, is valuable as a catalyst for such activities. Through the continuation of this research project and the development of case studies we hope to highlight particular features of partnership arrangements to improve the sustainability of the relationships.

The results from data collection at the end of 2008 and the development of the case studies will attempt to address the final two research questions in detail.

We anticipate that the Science Challenge with its culmination in a science conference will:

- provide effective quality learning experiences for students (particularly in isolated areas)
- identify strategies by which teachers can learn professionally, in rural and regional situations, by sharing ideas or receiving support through their partnership arrangements.
- Identify ways in which students can experience success in science

- Identifying ways of overcoming resource disadvantages,
- Identifying strategies by which schools can gain advantage from regional and rural settings through community-based initiatives.

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REFERENCES

Barmby, P., Kind, P. & Jones, K. (2008). Examining Changing Attitudes in Secondary School Science, *International Journal of Science Education*, Vol. 30, No. 8. pp1075-1093

Fensham, P. (2006) *Humanistic Science Education: Moves from within and challenges from without*. Keynote Lecture, Theme 4 IOSTE Symposium, Penang, Malaysia, July 30– August 4

George, R. (2006). A Cross-domain analysis of Change in Students' attitudes toward science and attitudes about the utility of science. *International Journal of Science Education,* Vol. 28, No. 6. pp571-591

Lyons, T. (2006) Different Countries, same science classes: students' experience of school science in their own words. *International Journal of Science Education,* Vol. 28, No. 6. pp591-613

Lyons, T., Cooksey, R., Panizzon, D., Parnell, A. & Pegg, J. (2006). *Science, ICT and Mathematics Education in Rural and Regional Australia: The SiMERR National Survey.* DEST: Canberra.

Pegg, J. (2005). Presentation at the national summit on 'Science, ICT and Mathematics in Rural and Regional Australia, Adelaide, Nov.

Pegg, J. (2008). Presentation at "Charting Futures for Science, ICT, Mathematics Education in Rural and Regional Victoria", March.

Symington, D., Campbell, C., & Tytler, R. (2008) SiMERR Forum Report from "Charting Futures for Science, ICT, Mathematics Education in Rural and Regional Victoria", March 2008

Tytler, R., Symington, D., Smith, C, & Rodrigues, S. (2008). An Innovative Framework based on best practice exemplars form the Australian School Innovation in Science, Technology and Mathematics (ASISTM) Project. Report prepared for the Australian Government: Department of Education, Employment and Workplace Relations.

Yaşar, S. & Baker, D., (2003). *The Impact of Involvement in a Science Fair on Seventh Grade Students.* Paper presented at the Annual Meeting of the National Association for Research in Science Teaching. 23-26 March, Philadelphia.

CLUSTERING RURAL SCHOOLS IN KOREA

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ABSTRACT

To know the effective and efficient idea for improving rural education cooperating small schools, managing educational program regionally, and clustering rural schools were reviewed. As rural schools have fewer students than urban one, they have many difficulties to teach students. Especially small number students caused small school not to do big group activity such as a soccer or baseball. To solve these problems cooperating, managing regionally, and clustering ideas were suggested and done. They are common in terms of making a bigger group and solving small school's problem. Even though three programs make small schools a bigger group, they do not try to integrate or close a school. They try to find an idea to solve their problems keeping their small schools. To solve small school's problems three programs have tried to share educational programs, teachers, and facilities by using transportation system or managing regionally. Integrating small schools is needed depending on the situation. But as rural education is also important the idea keeping rural small school should be considered at first. The three ideas are very useful for rural small schools.

Keywords: ***rural education, small school, clustering, cooperating***

1. INTRODUCTION

Rural education has had many problems like small school, long distance to school, poor educational condition, low achievement score and other things. In 2005, 770 schools out of 5,152 rural schools, 14.95%, had under 30 students. If the number of student per school goes to 60, the ratio of small school increases to 32.8%, which are 1,695 schools.

As rural schools have more difficulties to educate students they have tried to overcome the situation. At first the Korean government has tried to integrate small schools. If the number of school students increases, the government believes small school can solve the rural educational problems such as low competition among small students, few social relationship between students, and few opportunities to study. As a result 3,402 small schools had been integrated from 1982 to 2007.

The increase of integrated small schools in rural area has leaded to other problems such as a cultural deprivation because of closing a school in rural area, longer distance to school, and other things. The rural people have opposed the integration of small schools. The government has studied the alternatives to solve the rural educational problems instead of integration.

Three kinds of alternatives have been tried since 1996. The first is cooperating small schools; the second integrating areal management system; and the third clustering rural schools. The first is same as the third, but the operating office is different. The first was operated by the provincial educational office and the third by the Korean Ministry of Education, Science and Technology. The second is to manage and support rural small schools by regional office.

Three methods to manage and support rural schools instead of integrating were reviewed and investigated the idea for educating rural small schools.

2. COOPERATING SMALL SCHOOLS

Cooperating small schools were operated in Kangwon provincial educational office since 1995(Kangwon Provincial Educational Office, 1996). As Kangwon province has many mountains there are many small schools. Even though there are many small schools it is very difficult to integrate small schools because of bad road condition and mountain. It is very hard to give students transportation service. The provincial office searched for methods to improve rural education instead of integrating. The office surveyed opinions of students, teachers, and parents on educating rural small schools. The office tried to cooperate with small schools.

Rural small schools chose a few small schools which were closely located. Even though small schools could not be integrated as students did not go to school by bus every day they could gather once or twice a week. There are two types of school to cooperate with. The one is a centered school which manages small school and cooperative programs and the other is a surrounding school supported by the major school. These schools including the centered and surrounding schools are called the cooperative school.

The cooperative school students come together at a school once or twice a week. The school which gathers students turns around every meeting. When they come together, they can have a bigger class and study, and act together. If they do not gather, they can't have a class such as soccer, baseball, and other activities which needs many students.

In 1995 two cooperative schools were chosen and cooperated with each other and added three in 1996. The major school had commonly two or three surrounding schools. The cooperative school had tried team teaching, student board meeting, athletics, action study, and etc together. These kinds of class need many students. Before small schools cooperated with they couldn't have these kinds of class.

After the provincial office tried this method they evaluated the cooperative school. The effects of the cooperative school are to increase the effect and efficiency of dual class, to relieve teacher's load to manage small class, the cooperative study condition among teachers, the easy situation to communicate and exchange ideas for class, and to have better community relationships.

The office suggested the systematic managing system for the cooperative school. The school is very important for rural small schools, but the supporting and managing system was not systematically operated. The cooperating program and method should be systematically developed and supported by the provincial level and the central level.

3. MANAGING EDUCATIONAL ACTIVITIES REGIONALLY

Managing educational activities regionally was operated by Chonbuk Provincial Educational Office in 1999 and 2000. This program is applied not only for small schools but also for any other size schools. But it is more effective for rural small schools. Main idea of the areal management system is to use the personnel and material resources more effectively and efficiently. The local educational office has 20-30 elementary and secondary schools. Each school has its own managing system and doesn't help and cooperate with each other. This

managing system is ineffective. Chonbuk provincial educational office had tried to solve this problem and to suggest the areal management system.

The areal management system shares personnel and materials in the same area. Each school doesn't have enough teachers, facilities, and materials to offer students more versatile subjects. In 1999, 61.9% of middle school in Chonbuk province opened only one optional course even though students needed two or more optional courses to develop their abilities based on their personality. The case of high school was more serious. The ratio of single optional course was 75.6%. The ratio of teachers employed to those needed was 85.9% in 1999. As teachers were not sufficient they should teach the subject not directly related with their major. In 1999, 684 subjects were taught by teachers who did not major. The facilities which students used and studied were not enough. The ration of gymnasium maintained to total schools was 53.4%, that of language lab 44.0%, that of library 96.1%, and that of computer lab 103.7%(See Table 1). Except computer lab all other classes for diversified educational activities were not sufficient.

Chonbuk Educational Office offered the sharing project using the educational materials, facilities, and activities together in the same regional area. It provided 7 regional offices with three projects: sharing the curriculum, sharing teachers, and sharing educational facilities among schools.

Regional educational office surveyed the actual situation on teachers, curriculum, and educational facilities and planned three sharing programs. The first program was a curriculum sharing. Several schools came together at a school or at the regional office and developed the curriculum together. It is more helpful and easier for teachers to make a new curriculum. They could get new and old information easily and also get peer teachers' help. Especially new teachers needed these kinds of activities more. The second was a teacher sharing. The regional office employed teachers rounding several schools to teach students and teachers who joined with more than two schools. The former was called a rounding teacher and the latter a joint teacher. These teachers were different from the former teachers who were employed by the school. As those teachers were employed by regional office instead of a school building, the office could manage teachers more easily and efficiently than the school could. The teachers employed by the office could round schools depending on the courses opened at the school. As a result the school could offer more courses. The third was a facilities sharing. As we looked at the Table 1, each school had not sufficient facilities. If the regional office did coordinate using school facilities, a school could use the facilities more efficiently. The regional office surveyed school facilities and planned to use them cooperatively.

The Chonbuk Provincial Educational Office divided the provincial area into 7 regional one. Each regional office could employ school teachers not for school education but for regional education, manage sharing programs and facilities. The teachers who were employed by the regional office were a rounding or joint teachers. The number of teachers and schools using this type of teachers is as in Table 2. Number of teachers and schools was increased about 20% in 2001 relative to 1999. The result of rounding and joint teachers managed for 2 years from 1999 to 2000 saved 1,500,000,000 won (US $ 1,500,000) of teacher salary.

Table 1. Ratio of facilities maintained to total schools

	Schools	Gym	Video	Language	Lib	Comp	Music	Art	Multi	Audio	Home	Technical	Outdoor
Elem	442	202	13	86	442	419	108	109	8	159	42	106	106
Middle	197	112	25	148	167	188	202	162	10	123	167	158	55
High	127	95	38	103	127	188	109	104	60	104	71	34	31
Total	766	409	76	337	736	795	419	375	78	386	280	298	192
Ratio		53.4	9.9	44.0	96.1	103.7	54.7	49.0	10.2	50.4	36.6	38.9	25.1

Reference: Chonbuk Provincial Educational Office (2001). Regional Management for Sharing Teachers, Programs, and Facilities.

Table 2. Number of rounding or joint teachers and schools using these teachers

Content		Schools using rounding and joint teachers	Rounding and joint teachers	Teachers' classes per week	
				Average class per teacher	Total classes
1999.3.1	Elem	106	104	4.00	416
	Second	134	263	4.23	1,112
	Total	240	367	4.12	1,528
2001.2.28	Elem	131	131	4.00	524
	Second	143	336	4.00	1,344
	Total	274	467	4.00	1,868
Rate of Increase(%)		14.2	27.2	-2.9	22.3

Reference: Chonbuk Provincial Educational Office (2001). Regional Management for Sharing Teachers, Programs, and Facilities (2001)

The sharing of programs and facilities is physical activities and extra curriculum using gymnasium, auditorium, art center, audio and video lab, language lab, and etc. The detailed number of programs and facilities shared are as <Table 3>. In 1999 188 out of 766 school shared programs and facilities. The number of school sharing increased to 241.

After managing educational activities regionally in Chonbuk Educational Office in 1999 and 2000, students had more opportunities to learn, the office saved budget, the school could use facilities more efficiently. In spite of these merits the office had difficulties to manage teachers, programs and facilities regionally. There was also a risk to transport students from school to school. To remove these difficulties provincial and regional office would enact the procedure and sharing law.

Table 3. Number of programs and facilities sharing

Year	Programs	Centered schools	Surrounding schools	Facilities and materials shared
1999	47	42	146	58
2000	49	41	200	73

Reference: Chonbuk Provincial Educational Office (2001). Regional Management for Sharing Teachers, Programs, and Facilities (2001)

4. CLUSTERING RURAL SCHOOLS

Clustering rural schools was issued by the Ministry of Education, Science and Technology. From 1995 the provincial educational offices have tried to solve the problems of small rural schools by using cooperation or regional management. The Ministry of Education, Science and Technology tried to apply these ideas to all provincial offices need in 2006.

In 2006 the Minister selected 20 clusters out of national applied clusters and granted each cluster 150,000,000 won (US$ 150,000). And the provincial office should add 150,000,000 won as a matching fund. A cluster can prepare for the experimental lab, music center, more expensive materials for sharing among clustering schools. The facility such as lab or center was established at the centered school and the educational materials were shared. This program has continued since 2006.

The clustered schools prepared for the cooperative programs, joint programs, or programs for community based on the need of clustered schools. The common programs which clustering schools shared or joined cooperatively were English courses by a native teacher, student festival, science class, field study, athletics, rhetoric, and extra activities.

The clustering programs resulted in doing a class as a bigger group, helping teacher's research and study for teaching, having broader opportunity for learning a community, using facilities more efficiently, preparing for a better educational condition, and cooperating with a community member more closely.

The clustering program has difficulties such as parents' or community members' misunderstanding clustering as integrating, supporting mainly for the centered school, and increasing teachers' load to prepare for programs.

To improve these difficulties the standard procedure to operate the clustering program, a survey on students' and parents' need for clustering program, special befits for teachers worked for clustering program, and the cooperative program with community would be considered.

5. CONCLUSION

To know the effective and efficient idea for improving rural education cooperating small schools, managing educational program regionally, and clustering rural schools were reviewed. As rural schools have fewer students than urban one, they have many difficulties to teach students. Especially small number students caused small school not to do big group activity such as a soccer or baseball.

To solve these problems cooperating, managing regionally, and clustering ideas were suggested and done. They are common in terms of making a bigger group and solving small school's problem. Even though three programs makes small school a bigger group, they do not try to integrate or close a school. They try to find a idea to solve their problem keeping their small schools.

To solve small school's problems three programs have tried to share educational programs, teachers, and facilities by using transportation system or managing regionally. Integrating small schools is needed depending on the situation. But as rural education is also important the idea keeping rural small school should be considered at first. The three ideas are very useful for rural small schools.

REFERENCES

Choi, Joon Yul and Kang, Dae Jung(2007). *Small Schools Integrated and Improvement of Small Schools in Rural Area*. Ministry of Education and Human Resource Deveoplement.

Chonbuk Provincial Educational Office(2001). *Regional Management for Sharing Teachers, Programs, and Facilities*.

Chungnuk Provincial Educational Office((2000). Integrating Effectively Rural Small Schools.

Kang, Man Cheol et al. (2002). A Research for Rural Education Improvement. Chonnam Educational Institute.

Kangwon Provincial Educational Office(1995). *Cooperative Management of Small Schools*.

Jung, Ji Ung at al(2002*). A Research on Development for Rural Education*. Committee for Rural Education Development.

Park, Dae Sik et al(2004). *A Research on Planning for Welfare, Education, and Regional Development in Rural Area*. Korea Rural Economic Institute.

HOW WILL THIS MAKE ME A BETTER TEACHER?: THEORY, LITERACY LEARNING, AND SURVIVAL

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ABSTRACT

This paper is a reflection on the way that a background in sociological theory and research actually saved my teaching career by allowing me to shift from being a dispenser of knowledge to a cultural neophyte attempting to understand where he is. Teaching then is understood as a reading exercise which is undertaken in a particular place which itself needs to be read by the effective teacher. I conclude with some thoughts on what this perspective implies for literacy instruction.

Keywords: ***teacher education, sociology, literacy***

1. MAKING LIFE DIFFICULT

Teacher education presents a range of well-known challenges. The work of educators is complex, yet it is set inside a political climate that largely simplifies and demeans teaching. I consider my most important work as an educational leader to be the teaching I do in educational foundations at a small eastern Canadian university. To me the challenge is to make life and teaching more difficult and complicated for my students. This may seem an odd goal, but I am increasingly convinced that teacher education candidates come to teaching armed with an alarming set of allegedly atheoretical notions about what the work of teaching is and how they will carry it out.

In approaching problems of complexity and uncertainty with teacher education candidates I have begun to suggest that educational theory courses are perhaps the most pragmatic ones they will encounter in their teacher preparation. The argument goes something like this. As novice teachers you are looking for a set of uncontested and established strategies and techniques that will enable you to teach well. You want to get it right by applying and practising the moves that are known to work in teaching. You are not interested in theory. Theory will only cloud issues, introduce even more uncertainty into what is, for you, an already an uncertain process. You are uncertain about your ability to exercise control and to establish order and discipline in your classroom and this is foremost in your mind. Issues of multiple purposes and philosophical orientations and particularly the complexities introduced into school by the traditional foundational disciplines do nothing to help you understand the core competencies of the craft of teaching. You want to learn how to construct the perfect lesson plan set with the perfect unit of study. You want neatness, order, control and organization. Unfortunately when you do make your way into the schools you realize that they can be chaotic, unpredictable, disorderly, messy places full of individuals with intentions you cannot really control or even understand in a lot of cases.

So ironically, it is the very problematics that vex us most that are our best hope for achieving legitimate professional status. It is only by establishing that our work is not technocratic, but founded on highly complex human judgment that we can ever hope to achieve what high status professions have. To understand this we need, as professionals to embrace theory, and

particularly social theory[1], to work as hard as we can to understand social context and the layers of complexity that context and the diversity of place introduce into our work.

The challenge for the novice teacher, I argue, is to dive in and try to understand where you are and who you are presuming to teach. The source of the complexity is not only within the head of the child, it is more powerfully and more consequentially manifested in the diversity of social experience. To know how to teach is to know a great deal about where you are teaching and the conditions experienced by people in that place. This involves an immersion in the culture of the place, its history, the way power is exercised there, how resources are distributed, the racial, gender and class dynamics that shape social life, the way school has been experienced historically in the community by different kinds of families, and things of this order. In other words, the beginning teacher needs to be an anthropologist, and a good postmodern anthropologist who also possesses the capacity to look within at him or herself as a cultural construction.

Social theory and a strong grounding in the foundational disciplines then become tools to help make sense of how the institution of schooling works in a particular place. All teachers eventually find themselves in a particular place. There is no denying that schools and other educational institutions are becoming increasingly diverse, complex, messy and unpredictable places as late modernity/postmodernity both challenges and transforms core categories as fundamental as "childhood" (Buckingham, 2000; Kincheloe and Steinberg, 2000; Postman, 1994) and adolescence (Lesko, 2000).

I think we fail to understand the impact of this undercurrent because for the most part we remain stuck in stale theoretical debates best characterized by the essentialist-progressivist debate chronicled by Larabee, (2004) and Imig and Imig, (2006) among others. In an important sense this rejection of theory echoes ongoing debates in teacher education between essentialists and progressives. Theoretical, social and political issues concerning curriculum and instruction amount to a pragmatic debate between two competing camps about teacher effectiveness. These debates have been located principally in the twin ivory towers of the state educational bureaucracy and the university education faculty. As such these debates represent a struggle for the soul of the teacher, a struggle with counterpoises technical skill for both teacher and child against a more nuanced contextual understandings of children's specific social and psychological condition. The question is this: Does humanistic educational practice produce better educational results or work better than content-focused, technocratic practice?

The answer, of course, lies in an analysis of what "work" schooling is designed to accomplish. And this is a fundamentally political question: What work do we want our schools to do?

[1] I would argue, along with Frank Smith (1987) that foundational theory in education has come out of psychology. There is a longstanding and well established tradition of mapping the nature of learning through the developmental trajectory of childhood and young adulthood. In fact, most of our understandings of how children learn has been formed within this tradition, from Dewey, through Piaget and onto more contemporary work in developmental psychology and what is now called brain-based learning. Learning has been individuated and located in the head of the individual child whose intellectual processes are meticulously mapped and normed. It is only relatively recently that learning has come to be understood as a situated accomplishment which is rooted in culture and in collective action (Wenger, 1998, Rose, 2004). When learning is understood contextually it becomes easier to explain the regularities noticed by sociologists of education in terms of educational failure and educational success of identifiable social groups. As Bourdieu (1984, 1990) showed in his careful analyses, the educative power of the ordinary, habitual day to day practices of particular social class groups generates learning and life outcomes that are highly regularized and which largely reproduce existing status hierarchies.

Learning about learning: Finding a use for a sociology degree

In the introductory section of this essay I suggest that the largely acontextual theories of learning that were prominent when I did my teacher education made it difficult for teachers to come to understand the situational nature of most students' powerful learning. To put it very simply the irony is this: the intense focus on focused training actually made beginning teachers less "functional" in the diverse classrooms they faced as professional teachers. It was not too much theory and too little "practical" that posed problems, but the exact opposite. I think the best way to illustrate this is through a narrative examination of my own beginning moves as a teacher and that way that the radical difference I encountered in my first teaching assignment in an isolated "bush" community that made it virtually impossible for me to succeed using the intellectual tools I was given in teacher education.

In 1983 I had the good fortune to be placed in a teaching situation where pretty much all of my assumptions were challenged. My first teaching job was in a small comprehensive school in northern Manitoba that served a Metis community, a First Nations reserve and a small "White" enclave of hydro workers.[2] I thought I was trained well to teach social studies. My students were quiet and apparently compliant. They seemed to like me. I liked them. I mostly lectured, gave notes on the overhead, tried rather unsuccessfully to engage them in discussions about things like immigration flows, settlement patterns, the Cold War and the other material I was supposed to "cover," and cover the curriculum I did.

Then came the epiphany; just when I thought things were going so well, I gave my first set of tests. The results left me devastated. I had covered the curriculum, but I had done so alone. My pedagogical transmission had not been received and I experienced with great clarity Wittgenstein's invocation that, "when we communicate a feeling, something we can never know happens at the other end." Since the fall of 1983 I have been trying to figure out what happened.

After a great deal of introspection and help from a wonderful Principal named Pat Weese, I began to think about teaching as a relationship, an interchange, a give and take. I came to realize that I had to operate reflexively, I had to think about who I was and how what I did as a teacher was being received. In Grand Rapids I was forced to see teaching as dialogue, and this is a lesson I have tried, through the years not to forget. I came to understand that teaching is complex; it is about learning a place and the identity positions available to young people in that place. To the extent that locales remain distinct, notwithstanding our collective ride in what Giddens (1990) calls the globalizing "juggernaut" of late modernity, or the cacophony of ambivalent, consumption oriented, fragmented postmodern life (Bauman, 1995). To succeed and survive as a teacher in Grand Rapids Manitoba I had to learn where I was.

Grand Rapids actually taught me a use for my undergraduate sociology degree and it effectively challenged the way my teacher training prepared me to think about learning. My teacher training at Acadia University in the early 1980s was very much cast in a psychological register and we were schooled in various methodologies and techniques designed to train the minds of young people. In this discourse, learning happened largely in the heads of the more or less

[2] In the mid 1980s, the community of Grand Rapids Manitoba was spatially divided into at least three distinct sub-communities. Those First Nations people who signed Treaty in 188 were known as "status Indians" and were resident of the Grand Rapids First Nation reserve located in the community on the south bank of the South Saskatchewan River. Those First Nations people who did not sign the treaty were given land on the north bank of the South Saskatchewan. This group are known as Metis. The third sub-community was a settlement constructed by Manitoba Hydro for its (mostly southern Manitoba) workers.

generic "individual child" and so we studied theories of intellectual and moral development and the pedagogical techniques that followed from these theories.

I started questioning the hegemony of psychologically based learning theory in 1983, not for academic or intellectual reasons, but because I was put in a position where I had to … or quit. My roommate that year was not able to make the transition and he did quit. He became a part of that statistic that dogs our profession, the large percentage of young teachers who never really get established and who abandon teaching disillusioned, frustrated and angry. I think my friend quit because he had no theoretical tools with which to challenge his own curriculum, his pedagogy or the way these were engaged by children whose context he could neither accept nor understand. I began to see that the "problem" was not situated in the heads of those children, but in the relationships of power and identity that structured life in the school and in the larger context beyond the school.

I started learning about how to teach when I understood that people learn best and most powerfully when the context they find themselves in simultaneously compels and seduces them into doing particular things.[3] From the second term in Grand Rapids I made a fundamental shift in how I thought about what I was doing. I became a community researcher trying to discover where I was. I also became a teacher of literacy first and social studies second. I began to see my real job as helping my students speak, read and write in the context of social studies material. I learned how to engage students in discussions about issues that made sense to them and had relevance and began with their own knowledge. We talked about teen suicide, First Nations land claims, bias in the social studies texts, what was missing in those texts, Aboriginal spirituality, HIV/AIDS and I found that once the dialogue was open that it also became possible to speak of the Cold War and the fur trade and responsible government.

We organized such things as pow-wows, a give-away, trips to sweat lodges, elders' visits, and sponsored a youth conference to address my students' issues and concerns. Some of us built a trappers cabin out of logs in the bush one buggy May, we petitioned the school division to allow me to give a course in drama and music that turned us into a touring country music orchestra and a production company responsible for some very silly melodramas about life in the North. I don't want to make this sound like some kind of panacea. It wasn't. A large proportion of my students and their families struggled with substance abuse. English was still a relatively problematic language vis-à-vis Cree and the survival of the Cree language was an ongoing concern for many residents of the community. Racism was also endemic in the community at a number of levels. Teaching here was hard and complex work and many of my lessons were pretty lousy. What I do want to illustrate is the way this radically different social context forced me to think differently about teaching.

2. LITERACY AND THE SOCIOLOGIST/TEACHER

So what are the implications of this experience and reflection for schooled literacy instruction? I want to emphasize two points. First of all I want to argue that place and identity need to be considered seriously by those concerned with literacy education, particularly in the early years of schooling. Secondly, I think that George Bush has it wrong and that we do not need to return to simpler notions of what it means to be literate, what it is to teach and what it is to learn. The idea that as the world becomes more complex, education in particular, and intellectual culture in

[3] This insight reflects John Mayher's vision of what he calls "uncommon sense" (1990).

general (witness the role of many American intellectuals in the months following September 11/01) ought to become simpler is flawed, and indeed, dangerous.

1. So for the first point. It is clear to me, given my research and experience, that there are huge differences in parental access to the kinds of privileged literate traditions that provide some children with what Annette Lareau calls a huge "home advantage" in terms of school success (1989, 2003). There's nothing particularly new here. Generations of work in the sociology of education have confirmed and reconfirmed this conclusion. My principal contribution has been to demonstrate the link between geographic mobility and schooling and attempting to explain the resistance to schooling of rural youth in terms of a spatial identity which is linked to gender, social class and place. I think far too little attention is paid to place as a form or ordinary and inevitable exceptionality in educational analysis and in the training of teachers. My analysis of the way that education was experienced in the lives of people in a specific locale leaves me convinced that I'm right about stressing the importance of the multitude of differences children bring to school. This differential access forms the foundation for the cultural capital that is typically parlayed into educational credentials (Bourdieu, 1984; 1990).

I will make this point by focusing on the eastern Canadian province where I live, which is incidentally, one of the most "rural" in Canada according to most definitions. One key difference I have been suggesting is the difference between what has been called the "two Nova Scotias": one is urban and suburban Halifax and environs, the other is the rural part of the province. This difference, with small anomalies near universities, shows up on virtually all standardized testing, in dropout rates, aspirations and expectations measures, college and university admission and success rates, and other indicators usually associated with educational success. For example, Doug Willms 1997 study of literacy in Nova Scotian youth demonstrated this phenomenon. The top echelon of Nova Scotia students rank among the best of the best in Canada, while those in the middle and at the bottom are among the worst (Willms, 1997). I think I may know where each of these groups live.

This gap needs to be addressed in early literacy more than anywhere else. I would argue that elementary language instruction must be sociologically informed in the sense that layers of social difference must be recognized and addressed directly in language arts programming. What I mean here is that I think rural youth need strong literacy instruction that focuses on access to the very best of stories, not "textoids" and isolated skill drills; they need classrooms which will allow them to tell their stories as powerfully as they can with the best of technology, and ideally they need teachers who are committed to making this happen and to devoting a connected period of their professional lives to working in rural places.

Those rural youth who want to stay (who are "stuck" or "committed" to the local way of life) need literate tools to defend their spaces from the encroachments of modern capitalism. I think American educational historian Paul Theobald argues that rural America is being quickly depopulated, and to make a long story short, that this is both a human tragedy in terms of the decline of the small farm, as well as an ecological crisis in the making (1997). Rural depopulation, for Theobald, signals the removal of those people who have a stake in stewardship and who retain the kind of place-sensitive values that motivate resistance to environmentally destructive practices like wide-spread clear cutting, strip-mining, agribusiness, forest monocultures and spraying … and I might add corporate over-fishing. Theobald sees the rural school as the locus for what he calls a "rural renaissance," and indeed the seeds of this renaissance will need to be a high literate population of rural "stayers," the very clientele my work shows to have been very poorly served by public schooling.

It seems to me that this is not just a rural problem either. I believe that the kind of sociologist-teacher I'm describing needs to be politically informed and capable of debating and defining his or her own right to professional autonomy. I think the days are gone when teachers could demand respect and control without developing the professional discourse to defend it. We will not be protected by the union, curriculum, academics or by governments, and if we wish to retreat from professionalism into the instrumental world and become "learning technicians" then we are indeed headed for hard times … and so are our students.

2. Now the second point. Just beneath the surface of most discussions of early literacy and literacy in general, lurks some implicit or explicit notion of missing "basics." There is always a "literacy crisis" as Harvey Graff (1995) has shown in his research in the history of literacy. And just as surely, there are targeted populations who lack those basics and who are simultaneously victims and perpetrators of the crisis of the day. Virtually all of my work as a public school teacher has been with what might be called "marginal" children. My students have been precisely those who are discursively constructed as "requiring" highly controlled, standardized, "basics" approaches to literacy. I disagree with this position because it impoverishes the literate experience of young children most in need of a rich experience in school. I agree with Tom Popkewitz that the rural child is the country cousin of the dangerous and deficient inner city child in the contemporary discourse of marginalization (1998). As Popkewitz points out, educational research seldom analyses the way monsters are created, located, identified and classified in educational discourse. Crises and their objects are created for political purposes and literacy instruction continues to make an excellent football. At a more practical level, remedial exercises, work sheets, textoids and other forms of dummied-down reading material consistently serve to remind the most vulnerable literacy learners that reading really is stupid, and that writing really is about learning that the way you, your family and your friends use language is deficient.

Privileged youth have access to high quality children's books and strong, interested literate readers who model and share the love of good books, and it should come as no surprise to anyone that these children perform well on standardized testing and typically go on to fill the ranks of the middle class, business management and the professions. If the sociology of education has taught us anything over the past half-century it is this simple and problematic truth: education systems tend to reproduce social class structure. It is my dream that all children get access to the very best and that in school they meet the kinds of teachers who take what Liz Waterland calls an "apprenticeship" approach to reading, patiently showing children the way meaningful literate activity is accomplished (1989). Fragmented work in phonics, grammar, spelling lists, etc. will serve to present literacy to those children who need it most desperately as a chore. We know what works. Take reading for example: we know that children need to have language presented to them as a pleasurable experience; children need to read … a lot; they need books they can read and the expert teacher needs to know who her children are, what is in good books, and how to bring the child and the book together; children need to build fluency; children need to reflect on and discuss what they read.

In rural Nova Scotia, where I have done most of my teaching, a skills driven approach to literacy simply confirms well established notions that reading is a necessary evil, a struggle one needs to undertake and beat in order to survive, but not something that many people really would want to do for its own sake. This is the real literacy crisis as I see it, and it is especially rampant among young working class boys in rural Nova Scotia whose own fathers and male role models typically left the books behind as soon as they could and hated most schooled literacies. I'm not arguing that phonics, spelling and grammar should be abandoned, but rather

that they should be engaged in the context of real reading and writing as Constance Weaver has done, for instance, with grammar teaching in the context of writing (1999) or as Frank Smith has been arguing cogently for years (1984).

The point is that from a social perspective, one's grammar and one's literacy practices are thoroughly tied up in a wider range of social practices and subjectivities in communities as Shirley Brice Heath (1984), David Barton (1997) and many others have shown. Teachers of language arts need to become experts in the structure and culture of language use in these communities rather than the missionaries whose calling it is to fix the way people use language. This is clearly about power, the power to say to one group that your way of expression and implicitly, of perception is wrong. And let's admit frankly that we have close to a century of evidence in rural NS that such an approach doesn't work. Speech patterns remain highly colloquial and in some parts of the communities where I have taught, standard English is effectively a foreign language. It is the language of elsewhere, a mark of alterity, the stigma which throughout rural educational history in this province has been the preserve of those who can't or won't stay "down home." I think good teachers have always understood this problem and have sought to celebrate local culture while at the same time offering difference and new kinds of literate possibilities for those who stay as well as for those who leave. We are beginning to learn about the history of those places where this missionary attitude wasn't at play, and I think Carol Harris' recent biography of Nova Scotian rural educator Elizabeth Murray is a good example (1998).

So I am suggesting a well stocked, literature-rich classroom library. I'm suggesting that teachers be skilled in social analysis. I'm also suggesting a writing program that is founded on the kind of disciplined, interactive open-ended writing process suggested in my discussion of my own teaching in Grand Rapids above and by Donald Graves, Jane Hansen, David Doake, and many others. I'm suggesting that elementary language arts teachers ought to encourage literacy by creating work and play spaces that have a maximum of affordances for speech, reading, writing and the use of technology to support this. And finally I suggest that the insights of critical pedagogy and feminist research can enhance language arts programming by making it problematic and perhaps even transformative.

I think good language arts teachers are culturally sensitive social researchers continually asking questions about how language is used here in this particular place and how rich forms of literacy can improve people's lives here and now. What continues to disturb me about rural schooling is the extent to which young people continue to see literacy and schooling as a way out of town and little else. If this continues we should expect to see more and perhaps even higher rural dropout rates; new generations of school resistant young "lads" (as Paul Willis [1977] called them) or the bored young women Gaskell (1992) found recapitulating their own mothers' patterns of subordination because to them anything seems better than school; compliant young people quietly biding their time until they can use their credentials for passage to larger centers (Corbett, 2007b), in a word, a recipe for rural decline. It is my core philosophy of teaching that education ought to strive to provide the best for all. If you want to stay in a rural community this should be no reason not to forego a highly literate life. The challenge of beating the bushes for place-based pedagogical opportunity rather than accepting the generic worksheet or standardized test preparation as the foundation of a teaching practice is hard and often subversive work. Yet, it is the kind of work which just might help good teachers survive in the rural communities and in inner city neighborhoods that so desperately need them.

REFERENCES

Barton, D. (1997). *Local literacies*. London and New York: Routledge.

Bauman, Z. (1995). *Life in fragments*. London and New York: Routledge.

Bourdieu, P. (1984). *Distinction: A social critique of the judgment of taste*. Cambridge: Harvard University Press.

Bourdieu, P. (1990). *The logic of practice*. Stanford: Stanford University Press.

Buckingham, D. (2000). *After the death of childhood; Growing up in the age of electronic media.* London: Polity.

Corbett, M. (2007a) Course outline from Foundations and Contexts of Education, Acadia University.

Corbett, M. (2007b). *Learning to leave: The irony of schooling in a coastal community*. Black Point NS: Fernwood.

Gaskell, J. (1992). *Gender matters from school to work*. London: Falmer.

Giddens, A. (1990). *The consequences of modernity*. Stanford: Stanford University Press.

Graff, H. (1995). *The labyrinths of literacy: Reflections on literacy past and present.* Pittsburgh: University of Pittsburgh Press.

Harris, C. (1998). *A sense of themselves: Elizabeth Murray's leadership in school and community.* (Halifax, N.S.: Fernwood).

Heath, S. B. (1984). *Ways with words: Language, life and work in communities and classrooms*. Cambridge: Cambridge University Press.

Imig, D and Imig, S. (2006). What do Beginning Teachers Need to Know? Journal of Teacher Education, *57(3), 286-291.*

Kincheloe, J and Steinberg, s. (1997). *Kinderculture: The corporate construction of childhood*. Boulder Co: Westview Press.

Labaree, D. (2004). *The trouble with Ed Schools*? New Haven: Yale University Press.

Lareau, A. (1989). *Home advantage: Social class and parent intervention in elementary education*. Lanham MD: Rowman and Littlefield.

Lareau, A. (2003). *Unequal childhoods: Class, race and family life*. Berkley: University of California Press.

Lesko, N. (2001). *Act your age! A cultural construction of adolescence*. New York: Routledge Falmer.

Mayher, J. (1990). *Uncommon sense*. Portsmouth NH: Heinemann.

Popkewitz, T. (1998). *Struggling for the soul: The politics of schooling and the construction of the teacher*. New York: Teachers College Press.

Postman, N. (1994). *The disappearance of childhood*. New York: Vintage.

Robertson, H. (1973). *Grass Roots*. Toronto: Lorimer.

Rose, M. (2004). *Working intelligence: Valuing the intelligence of the American worker*. New York: Vaintage.

Smith, F. (1984). *Reading instruction that makes sense*. New York: Teachers College Press.

Theobald, P. (1997). *Teaching the commons: Place, pride and the renewal of community*. Boulder Co.: Westview Press.

Weaver, C. (1998). *Teaching grammar in context*. Portsmouth NH: Boynton/Cook.

Wenger, E. (1998). *Communities of practice: Learning, meaning and identity*. Cambridge UK: Cambridge University Press.

Waterland, L. (1989). *Read with me*. London: Thimble.

Willis, P. (1977). *Learning to labour: How working class kids get working class jobs*. New York: Columbia University Press.

Willms, J. D. (1997). *Literacy skills of Canadian youth*. Ottawa: Statistics Canada. Catalogue No. 89-552-MIE, No 1.

SITUATING PRACTICE IN RURAL SCHOOLS: TRANSIENCE, ADAPTATION AND OPPORTUNITY

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ABSTRACT

The 'Bush Tracks' collective is a team of researchers in the University of New England researching rural schooling. In this paper we describe some of the results of two projects investigating rural pedagogy and rural leadership, including accelerated progression to positions of leadership. Our focus has been on discovering factors associated with the process of teachers' learning to situate their practices in the rural context. Transience of teachers and leaders is common in rural areas. The notion of 'transience' is usually viewed negatively, as part of a deficit model of rural education. A conclusion of our research is that transience should be viewed positively, as providing opportunities and acting as a catalyst for the development of good teachers and good leaders.

Keywords: ***rural, leadership, pedagogy, transience, opportunity, adaptation***

1. INTRODUCTION

A major aim of the Bush Tracks Project is to investigate issues related to rural teaching transitions: the transitions from student to beginning teacher; to rural teacher; and to school leader, including the accelerated progression from beginning teacher to school leader. Our projects have so far included surveys of rural teachers at all career stages, interviews with selected teachers and leaders, observations in schools, follow-up interviews and group discussions. In our research we have identified a number of themes which highlight the dynamic nature of teaching and the ways in which teachers and leaders adapt, in the rural context, both their pedagogy and the demands of their leadership role.

2. TRANSIENCE AND MOVEMENT

The idea of 'transience' underlies many of the findings from studies of rural schooling. The fact that Australia is facing severe teacher shortages in relation to rural school staffing (Appleton, 1998; Yarrow, Herschell & Millwater, 1999; Herrington & Herrington, 2001) is one indication of transience — teachers do not stay long in many rural areas, necessitating the movement of other teachers into the vacated positions. A similar situation of crisis in terms of teacher shortages in rural schools has been identified in the US (Bolich, 2001; Brewster & Railsback, 2001), Canada (Baker, 2003; Grimmett & Echols, 2002; Press, Galway & Barnes, 2002) and New Zealand (Lang, 1999).

Rural communities themselves often have a transient nature resulting from the effects of 'outside forces' such as globalisation, economic restructuring, unemployment, drought and environmental change (Bourke & Lockie, 2001; Lawrence, 2005; Stayner, 2005). Unlike the forms of transience in metropolitan areas, which are frequently appraised positively through the

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use of terms such as 'vibrancy' and 'cosmopolitanism', the transient nature of rural communities poses a direct threat to their social and economic sustainability. The changing demographic resulting from urban drift has a negative impact upon the social fabric of the rural environment by dramatically altering the community profile rather than being a simple reduction of scale (Hugo, 2005; Smailes, Griffin & Argent, 2005). The evaluation of transience, then, is highly context dependent and often polarised around population growth or decline.

'Transience' in rural schools evokes notions of both student and teacher movement, and the movement is usually interpreted negatively, in a deficit way. Student movement occurs as families move away but also as parents make decisions to send their children to school in a regional centre, involving a bus journey which often goes right past the rural school, or send their children away to boarding school. These 'defections' are commonly viewed as a threat to the continued existence of the rural school. A lack of teacher stability and high rate of teacher turnover are also bemoaned, and changes in local communities are nostalgically regretted. Such complaints indicate that we have been seduced by the idea and value of continuity (McConaghy, 2006, p.55). By contrast, mobility theorists such as Urry (2000) argue that transience is a natural social phenomenon and is not abhorrent. As a result of our investigations of rural schooling in our Bush Tracks projects, we have been encouraged to consider a reinterpretation of the idea of 'transience' in a positive way, to see it as an opportunity and indeed a catalyst for a teacher's growth and development.

Clifford's characterisation of human activity 'as constituted by displacements as much as by stasis' (1997, p.2) encourages this notion of reconsidering the value of stability. Place theorists such as Lefebvre (1974) and de Certeau (1986) argue that all social practices (e.g. teaching practices) are spatialised, i.e. social practices are produced in certain ways in certain places. Rather than simply being an opportunity for growth and development, is transience in fact necessary for teacher learning and the generation of new pedagogical and leadership knowledge?

In our attempts to theorise rural teaching and teacher learning, we have been influenced by a number of ideas related to transience and the associated concept of movement. By exploring rural teachers' lived experiences we have identified notions of adaptation and opportunity within a complex mix of dynamics — rural teaching dynamics, rural leadership dynamics, dynamics of social positionality, and dynamics of proximity. These various dynamics can all be represented graphically in triangular diagrams, as will be explained in the discussion below.

When teachers move to rural schools, they bring with them more than their physical presence. Teachers are physical beings but they are also social beings with a professional persona, i.e. entities which are not just physical. Examining teachers in rural contexts therefore involves thinking geographically or spatially about social phenomena such as 'teaching' or, more explicitly, 'rural teaching'. How do teachers change their practices when they move to rural contexts? What is involved in the changes? What are the elements of 'rural teaching' when it is examined in a dynamic rather than static fashion? In other words, what are the influences on 'situated practice' in a rural context?

Exploring the situatedness of practices and in its more dynamic form the situating of practices in schooling (see also Letts et al., 2005) led us to ask how the practices of pedagogy and leadership are situated in schooling.

3. MOVEMENT AND ADAPTATION

Movement implies both a journey and a destination. The movement of a teacher into a rural context implies both a physical and a non-physical journey. Physically, the teacher moves to a new school and a new community — movement through place. Because teaching is a highly contextual activity, the physical movement is eventually accompanied by a movement of the teacher's practices as s/he adapts previous learning about how to teach and/or lead in a new context. The period between the physical movement and the movement of practice can be viewed as a transition, a notion with its own associated suggestion of movement — movement through time.

The physical journey to a rural context is accompanied by these elements of teacher learning and transitions. The teacher learning, in our view, concerns the development of practices, specifically in pedagogy and leadership. 'Socio-spatial dynamics' represents the movement of social practices through time and space. Bernstein (2000, p.9) describes the process of regionalisation of knowledge as the working out of conflicts between current practices and new contexts. 'Singulars' (such as current beliefs about teaching) are recontextualised in new situations. In our current argument, the conflict arising from the gap — the 'lack of fit' between current practices and the new context — signifies an opportunity for adaptation and new learning. The process of successful adaptation to the new context is an example of Piaget's concept of accommodation (adapting one's schema or 'mental map' to new information) as opposed to assimilation (absorbing new information into one's current views). The process is a dynamic one, hence the term 'socio-spatial dynamics'.

Woods (1999, p.120) defines this process of accommodation as the 'successful adaptation to changes'. He identified four elements in the process: contestation, appropriation, strategic action and realignment. The playing-out of these elements was clear in the responses of rural teachers we interviewed. Comments such as the following from a Teaching Principal (TP) were typical:

> *We got a directive last week that the kids in Years 3 and 5 had to be re-enrolled on the new forms … I'm not going to do it and if I get my knuckles rapped, that's too bad. [TP3] [contestation]*

> *I remember when they said no children in a kindergarten class over twenty. But … I had twenty-five, including five kinders. So they gave me one hour per week for a kindergarten child, so that worked out at almost one day per week [5 hours]. And the money is supposed to be spent on kindergarten … [but I employed] someone to take the top end [the older students] while I worked down the bottom end, because I think that if you have not got the grounding in kindergarten, the children will struggle all the rest of their lives. [TP3] [appropriation, strategic action and realignment]*

4. DEVELOPING A RURAL PEDAGOGY

The mutual influence of the various movements described above, the dynamic of rural teaching, can be represented graphically as in Figure 1. In turn, the 'practices' part of the diagram can be broken down into a triangular representation of the contextual factors. The process of a teacher developing a rural pedagogy, for example, can be represented as a dynamic affected by three different dimensions, as shown in Figure 2. The contextual and affective dimensions are also particularly relevant to leadership practices, as discussed below.

We did not find that cognitive expectations of students were any different for teachers in rural areas. However teachers were conscious of rural disadvantage (Alston, 2005; Commonwealth of Australia, 2000) and were creative and persistent in their efforts to reduce this disadvantage:

> *... my role is for them to see that they are so much a part of a cohort of thousands of kids in the state ... I set higher benchmarks because that's where I want them to be. [TP2]*

> *We have to provide opportunities for the students to see where they're at, to recognise that they're every bit as good as a kid across the state. I think that probably is one of the biggest challenges. [TP4]*

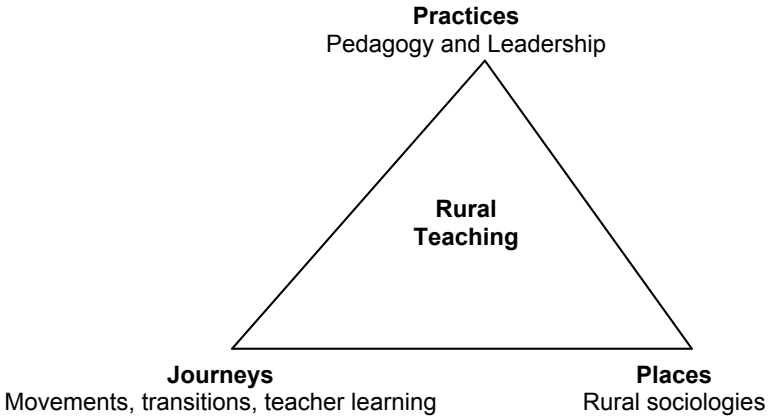

Figure 1: The dynamics of a teacher's journey into rural teaching

(Bush Tracks Research Collective 2006, p.8)

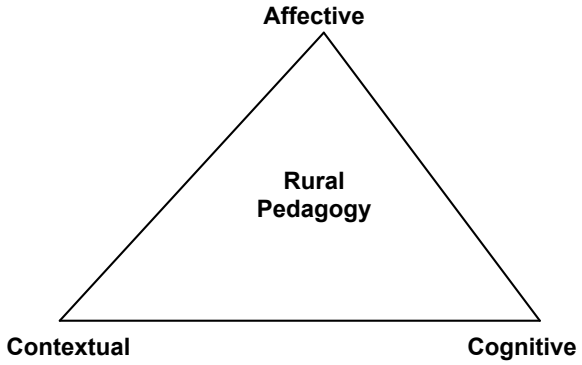

Figure 2: The dimensions of rural pedagogy (McConaghy, Lloyd, Hardy & Jenkins, 2006, p.17)

These Teaching Principals felt that teaching in their rural school encouraged a focus on 'the whole child' and that 'in fact [the children] could end up with more opportunities than kids in larger centres whose parents are not providing after school [activities]' because 'we try in our little school to make sure that children don't miss out on anything' [TP8]. The general acceptance that opportunities for their students were reduced by their location in a rural context ensured that the Teaching Principals deliberately increased opportunities for their students to 'grow' by bringing the outside world in wherever possible, such as via guest speakers and technology, or by taking the children out, such as on excursions to the city or regional centres:

> *Some of these children work so hard at home. I have these children who have their chores and ... when we go on excursions their eyes open up and they get to know more about the outside world*

and I think because we tell them, you know, ... there is a big world out there that they have to see and we watch current affairs shows like Behind The News and discuss things and on the internet we do chat forums and I just find by exposing the children they're getting used to different things they want to learn more about. [TP1]

Whereas fear of liability in the case of accidents and bureaucratic requirements such as risk assessment have led to a reduction in the number of excursions undertaken in many city schools, it seems to be the case that teachers in rural schools value the importance of such excursions too highly to reduce them.

Although cognitive factors alone were not seen as significant in our study, the interplay between cognitive and contextual factors was relevant and acted as a catalyst to adaptation. In a positive way, the interplay affected pedagogy by encouraging broader educational experiences (such as excursions) and creative solutions to the problem of achieving multiple outcomes in mixed-stage classes. A less clear-cut effect on pedagogy resulted from the influence of the local community, which all interviewed teachers noted as a significant influence on their practice.

5. INFLUENCE OF THE LOCAL COMMUNITY

In some communities, 'transience' causes change in the local context. Economic and demographic fluctuations can lead to change in community expectations of the school. With centralisation of industries, for example, many professional members of some rural communities simply move away, taking their children with them and thus affecting the socio-economic make-up of the school and in turn affecting the extent and type of change in a teacher's practice. Even in more stable communities, however, teachers felt constrained — sometimes in a positive way but also negatively — by the expectations of their local community.

We found a teacher's affective response to the interplay between cognitive and contextual factors was significant, as has been recognised elsewhere (Britzman, 1998, 2003; Boler, 1999; Todd, 1997). The importance of affective factors was clear with respect to community relations:

... it's small communities ... and how they relate ... they definitely make you feel as though you are not one of us. ... you know I'm here to do a job at the school. I do the best thing by the kids and [have to] keep all of that personal kind of stuff separate and I think that's where it's really hard. ... [TP6]

Woods (1999) identified different sociological factors involved in teacher stress and burnout. He classified them as operating at the micro, meso or macro level: 'the micro refers to social factors within each teacher's biography and person; the meso is related to institutional and other middle range factors; the macro deals with wider forces deriving from global trends and government policy' (Woods, 1999, p.115). Relations with the community are examples of micro stressors.

6. RURAL LEADERSHIP AND OPPORTUNITY

At the meso stressor level, rural teachers in a position of leadership experienced frustration with outside influences such as Department of Education and Training directives, because of their metrocentric, 'one size fits all' nature. Regulations which were important in urban areas were often seen as completely irrelevant in the rural context, leading to feelings of conflict and

frustration as teachers tried to satisfy contradictory desires — acting as directed versus working out an acceptable way of modifying the directive to be more suitable to the local context.

The interplay between cognitive and contextual factors was most pronounced in our examination of the leadership practices of the rural teachers studied. Accelerated progression to leadership positions is common in rural areas (Lunn, 1997; Hammond, 2001) as a result of the transience noted above. While accelerated progression is frequently seen as an opportunity for career advancement, many of the teachers we interviewed spoke more in negative than in positive terms. Negative factors identified include lack of experience (see Boylan et al., 1993), lack of support, conflict between teaching and leadership roles, lack of personal space, and nervousness about the level of responsibility. In relation to the struggles involved in accelerated leadership, our triangular representation of the dynamic factors involved is an image rather than a diagram:

> *I was building a pyramid from the top down … I had nothing underneath me, and here I was sitting at the top, desperately trying to fill in all the bricks beneath me. [TP9]*

In our second project, the Teaching Principals we interviewed were mostly mid- or late-career thus were not at that time exemplars of accelerated progression. 'Opportunity' for these professionals had a different focus but still contained negative elements. The TPs recognised that their own initial advancement into a leadership position was a positive opportunity but a contrary opinion was also expressed by several Principals, namely that a TP position was a 'dead-end' role, leading nowhere:

> *The principalship of a small school pigeonholes you professionally and most of the professionals in this group are recycled, moving from one [small] school to another. [TP5]*

These principals felt that taking up a position of Teaching Principal led to their being labelled at this level and restricted their ability for career advancement. Their manifestation of 'transience' involved moving from one small school to another rather than on to a bigger school and possibly away from a rural context. They felt that their progression in career terms was curtailed by the very role that initially seemed to offer opportunity for advancement. Related to the negative side of opportunity in the leadership context was (lack of) opportunity for professional development: 'There are courses put on for us, mandatory courses put on for principals but I think as far as professional development at times, it's a bit lacking' [TP1].

By contrast, however, a more positive conclusion was drawn in relation to pedagogy. All Teaching Principals studied were in schools with access, by nature of their isolation, to extra professional development opportunities under the auspices of the national Country Areas Program. They used adjectives such as 'wonderful' [TP8] to describe these opportunities for professional development in relation to their teaching. They are not always able to take advantage of these opportunities because of contextual factors such as the difficulty of getting casual staff to cover for their absence: 'I'm not game to leave the school' [TP3]. When they are able to engage in such professional development, they feel it is beneficial for their practice.

Thus 'opportunity' is a term with different manifestations, both positive and negative, for the range of teachers in the rural contexts we studied. While 'leadership opportunity' was viewed in a number of positive and negative ways as described above, 'teaching opportunity' was viewed in a more straightforwardly positive fashion. Any problematic aspect of the concept of 'opportunity' related to teaching was most pronounced in the Teaching Principals, for whom the conflict between teaching and leadership roles was most extreme.

7. CONCEPTUALISING CAREERS IN RURAL EDUCATION

The teachers interviewed in our first project identified four categories of 'negative aspects of their leadership opportunities': lack of experience, lack of support, conflict between teaching and leadership roles, and lack of personal space. While lack of experience was less of a problem for the Teaching Principals in the second project, the other issues remained problematic. Responsibility and accountability, personal and professional issues, and 'fishbowl' effects from being always 'on show' in the community were identified in the first project (Miller, Graham & Paterson, 2006) and confirmed in the second project. Many of the teachers described the difficulties they experienced balancing work and family demands, the pressures and pleasures resulting from living in a small community, and the challenges that were integral to the role of rural educator and school leader.

As well as the four categories described — leadership opportunities, responsibilities, the personal and the professional, and the fishbowl effect (life in the public gaze) — two themes emerged as important: proximity and transparency. Because of the proximity of individuals to each other in a rural community, facets of teachers' lives become more transparent (Miller et al., p.39) with the result that recontextualising of practice (Bernstein, 2000) becomes more public in the rural context.

A further framework that we found fruitful when analysing the situated practices of rural teachers is the geophilosophical notion of 'becoming' (Deleuze & Guattari, 1987). Transience implies movement, and movement in turn implies change — 'becoming' rather than 'being'. 'Becomings' in this interpretation are matters of geography more than history: 'becoming' is a dynamic of space and place; a symbiosis of entries, exits and re-entries (McConaghy, 2006, pp.47, 52).

Deleuze and Guattari's geophilosophical notion of 'becoming' is intimately connected with their theorisation of politics, for which they invoke the figuration of lines. Deleuze and Guattari theorise many kinds of politics, different types of lines, with varying degrees of rigidity or suppleness, each of which may facilitate or hinder becomings, in much the same ways that the teachers and principals in this research have alluded to. Deleuze and Parnet refer to the rigid politics of teaching: 'A profession is a rigid segment … for example being a teacher' (2002, p. 125). Yet, Deleuze and Parnet also argue that *'at the same time*, we have lines of segmentarity which are much more supple … they trace out little modifications, they make detours' (2002, p. 124, emphasis added). The simultaneity and interaction, in other words the entanglement, of these different politics enables the possibility of — in fact, encourages — the contestations, appropriations, strategic actions and realignments to which the teachers' and principals' accounts allude.

Analysis of their 'becoming' in terms of their leadership roles in rural contexts involved our Teaching Principals in deciphering an entanglement of positive and negative aspects of opportunity. Dealing with the micro and meso stressors incumbent with the leadership role involved adaptation to reduce the negative aspects. Their 'becoming' in terms of the teaching side of their careers, however, involved more positive adaptations. As they learned to situate their practices in their rural context, they focused on improving opportunities for their students.

8. CONCLUSION

We have reframed transitions in teaching, and the teacher learning these movements enable, as significant opportunities for the production of knowledge for teaching and leadership. Although

Vinson (2002) argued that there were fewer opportunities for teacher learning in rural schools, an alternative view drawn from our research and rural teaching narratives is that a great deal of formative professional learning takes place in rural schools. As a principal of a remote secondary school expressed it (McConaghy, 2006, p. 55), 'Here we train good teachers for the coast.'

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REFERENCES

Alston, M. (2005). Social exclusion in rural Australia. In C. Cocklin & J. Dibden (Eds), *Sustainability and change in rural Australia* (pp. 159–156). Sydney: University of New South Wales Press.

Appleton, K. (1998). Putting rurality on the agenda: Beginning teachers in rural schools. Paper presented at the Annual Conference of the Australian Association for Research in Education, 29 November–3 December, Adelaide.

Baker, C. (2003). Education in small, remote and northern communities: Challenges to meet. *Education Canada* 43(3), 13–14.

Bernstein, B. (2000, revised edn.). *Pedagogy, symbolic control and identity.* Lanham: Rowman and Littlefield.

Bolich, A. (2001). Reduce your losses: Help new teachers become veteran teachers. Atlanta, GA: Southern Regional Education Board.

Bourke, L. and Lockie, S. (2001). Rural Australia: An introduction. In S. Lockie & L. Bourke (eds.) *Rurality Bites.* Annandale: Pluto Press.

Boylan, C., Sinclair, R., Smith, A., Squires, D., Edwards, J., Jacob, A., O'Malley, D. and Nolan, B. (1993). Retaining teachers in rural schools: Satisfaction, commitment, and lifestyles. In C. Boylan & M. Alston (eds.) *Rural education issues: An Australian perspective.* Wagga Wagga, NSW: SPERA.

Brewster, C. and Railsback, J. (2001). Supporting beginning teachers: How administrators, teachers and policymakers can help new teachers succeed. Portland, OR: Northwest Regional Educational Laboratory.

Britzman, D. (1998). *Lost subjects, contested objects.* New York: SUNY Press.

Britzman, D. (2003). *After education.* New York: SUNY Press.

Bush Tracks Research Collective (2006) Bush Tracks: Exploring rural teaching transitions. *Education in Rural Australia* 16(2), 1–11.

Clifford, J. (1997). *Routes, travel and translation in the twentieth century.* Cambridge, MA: Harvard University Press.

de Certeau, M. (1986). *Heterologies. Discourse on the other* (translated by B. Massumi). Manchester: Manchester University Press.

Deleuze, G. and Guattari, F. (1987). *A thousand plateaus: Capitalism and schizophrenia* (translated by Brian Massumi). Minneapolis: University of Minnesota Press. (Originally published in French 1980)

Deleuze, G. and Parnet, C. (2002). *Dialogues II* (translated by Hugh Tomlinson, Barbara Habberjam & Eliot Ross Albert). London & New York: Continuum. (Original work published in French, 1977)

Grimmett, P. P. and Echols, F.H. (2002). Teacher and administrator shortages in changing times. *Canadian Journal of Education* 25(4), 328–343.
Hammond, J. (2001). The leadership crisis: Is it for real? *Principal* Vol.81.
Herrington, A. and Herrington, J. (2001). Web-based strategies for professional induction in rural, regional and remote areas. Paper presented at Conference of the Australian Association for Research in Education, 2–6 December, Melbourne.
Hugo, G. (2005). The state of rural populations. In C. Cocklin & J. Dibden (Eds), *Sustainability and change in rural Australia* (pp. 56–79). Sydney: University of New South Wales Press.
Lang, C. (1999). When does it get any easier? Beginning teachers' experiences during their first year of teaching. Paper presented at the Joint Annual Conference of the Australian Association for Research in Education and New Zealand Association for Research in Education, 29 November–2 December, Melbourne.
Lawrence, G. (2005). Globalisation, agricultural production systems and rural restructuring. In C. Cocklin & J. Dibden (Eds), *Sustainability and change in rural Australia* (pp. 104–120). Sydney: University of New South Wales Press.
Lefebvre, H. (1974). *The production of space* (translated by D. Nicholson-Smith). London: Blackwell.
Letts, W., Novak, M., Gottschall, K., Green, B. and Meyenn, B. (2005). Different places, familiar spaces: Rural and remote education as situated practice. In *Report of the consultation on future directions for public education and training: 'One size doesn't fit all'.* Sydney: NSW Department of Education and Training.
Lunn, S. (1997). *Rural strategies project.* Brisbane: Priority Country Area Programme.
McConaghy, C. (2006) Transience and teaching: Place and the new psychoanalytic sociologies of teaching. *Education in Rural Australia* 16(2), 47–57.
McConaghy, C., Lloyd, L., Hardy, J. and Jenkins, K. (2006) Bush Tracks: Journeys in the development of rural pedagogies. *Education in Rural Australia* 16(2), 13–29.
Miller, J., Graham, L. and Paterson, D. (2006) Bush Tracks: Viewing teachers' experiences of leadership in rural schools through a contextual lens. *Education in Rural Australia* 16(2), 31–45.
Press, H., Galway, G. & Barnes, E. (2002). Teacher labor market conditions in Canada: Balancing supply and demand. *School Business Affairs* November, 28–32.
Smailes, P., Griffin, T. and Argent, N. (2005). The changing social framework. In C. Cocklin & J. Dibden (Eds), *Sustainability and change in rural Australia* (pp. 80–102). Sydney: University of New South Wales Press.
Stayner, R. (2005). The changing economics of rural communities. In C. Cocklin & J. Dibden (Eds), *Sustainability and change in rural Australia* (pp. 121–138). Sydney: University of New South Wales Press.
Todd, S. (1997). Desiring desire in rethinking pedagogy. In S. Todd (ed.) *Learning desire* (pp.1–16). New York: Routledge.
Urry, R. (2000). *Sociology beyond societies: Mobilities for the twenty-first century*. New York: Routledge.
Vinson, T. (2002). *Inquiry into public education in New South Wales — Second report*. July. http://www.pub-ed-inquiry.org.au
Woods, P. (1999). Intensification and stress in teaching. In R. Vandenberghe & M. Hubermann (eds.) *Understanding and preventing teacher burnout: A sourcebook of international research and practice* (pp.115–138). Cambridge: Cambridge University Press.
Yarrow, A., Herschell, P. and Millwater, J. (1999). Listening to country voices: Preparing, attracting and retaining teachers for rural and remote areas. *Education in Rural Australia* 9(2), 1–12.

TEACHING THE WORLD'S CHILDREN: THEORY AND PRACTICE IN MIXED-GRADE CLASSES

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ABSTRACT

Research studies consistently demonstrate that mixed-grade classes in primary schools are not inferior to single-grade classes in terms of both cognitive factors (student achievement) and non-cognitive factors (such as self-concept, confidence, liking for school, independence and responsibility). Mixed-grade classes can be formed by choice (multi-age classes) or necessity (multi-grade classes). Multi-age classes are typically urban whereas multi-grade classes are typically rural. Caution must be exercised when generalising research results because what goes on inside the classroom is more important than the label attached to the class. Nevertheless the general question of whether established multi-age teaching strategies can be successfully adopted by multi-grade rural teachers is relevant. Teachers in developed countries have more flexibility to use a range of innovative strategies to encourage student learning. A selection of these strategies is described, and the question of their applicability in rural multi-grade schools is explored.

Keywords: ***mixed-grade, multi-age, multi-grade, composite, combination, grouping***

1. INTRODUCTION

The organisation of primary schoolchildren into single-grade classes has historically been a response (1) to increased enrolments, allowing classes of same-age students to be formed; and (2) to a belief that a model of economic efficiency based on division of labour could be implemented in schools (Cornish & Garner, 2008, p.2; Pratt, 1986, pp.112–113). A lock-step progression through school, where children of the same age are 'locked' together in the same grade and 'step' forward together to the higher grades, has been dominant in developed countries for up to 200 years. Proponents of the lock-step approach believe that children of a similar age are similar in terms of their stage of development and their ability to learn a similar curriculum, and that putting them in the same class makes teaching them more efficient and allows their learning to be more effective.

Alongside these single-grade classes, however, **mixed-grade** or **multi-grade** classes have always existed. In rural areas with small enrolments, schools have always had multi-grade classes, with sometimes only one class in the whole school. In urban areas, most primary schools arrange the students into single-grade classes as far as possible, with a few mixed-grade classes for the 'extra' children who will not fit into the single-grade classes. Some schools have organised their students entirely into mixed-grade classes, often as a response to growing or shrinking enrolments in the whole school. All these arrangements of mixed-grade classes are based on necessity.

In developing countries, a greater number of children have been enabled to attend school by the provision of multi-grade schools. In many cases, a small school enrolment is not the problem but a lack of teachers or buildings is, especially in rural and remote areas. With insufficient

teachers to staff single-grade classes, an innovation has been the formation of multi-grade classes. While much progress has been made worldwide, it is still the case that the Millennium Development Goal of 'Education For All' is not likely to be achieved by the target date of 2015 (Spielmann, 2008).

These various types of mixed-grade class have all been formed for reasons of necessity or administrative efficiency rather than for sound pedagogical reasons. In developed countries such as Australia, the United States and the United Kingdom, mixed-grade classes are also sometimes formed by choice, based on philosophical preference and a social constructivist belief that learning for most students is more effective in such classes. Proponents of these classes, which are often called **multi-age** classes, believe that increasing the diversity in a class by increasing the age range and development span makes it more likely that a teacher can arrange students into groups which are better suited to their learning needs. Usually these groups are mixed-age and mixed-grade groups. Multi-age teachers believe that children learn best when they can 'construct' their learning through social interaction with both older and younger peers.

Latterly in New South Wales, syllabus documents have been rewritten to cover a two-grade span, called a **stage**. One reason for the change to a two-year model has been the explicit recognition that children of the same age are *not* always at the same stage of development. Many students need longer than a year to achieve age benchmarks and syllabus outcomes related to them. Stage classes have thus begun to be formed in New South Wales.

Thus even in developed countries, mixed-grade classes have a long history and are still current. The names of the different types of mixed-grade class are numerous and I have defined them more fully elsewhere (Cornish, 2006a; Lloyd, 1997, 1999). In brief:

1. *multi-grade* classes are permanently mixed-grade, usually found in rural and remote areas, and formed by necessity. Teacher turnover can be high in rural areas so even though the class is permanent, the teacher might only teach the class for one or two years. Students usually follow a grade-specific syllabus, often working individually from a textbook. Class sizes range from extremely small to average or large; the number of grades in the class ranges from two to seven; some grades might have no students in them.
2. *composite* or *combination* classes are a subset of multi-grade classes. They are usually two-grade classes, commonly urban/regional, formed by necessity and, importantly, often temporary. Students usually follow a grade-specific syllabus.
3. *multi-age* classes are formed by choice because of a philosophical commitment to social constructivism. They are commonly found in urban or regional schools. Teacher continuity is high, allowing a strong focus on individual progress and 'developmentally appropriate' curriculum which is definitely not grade-specific.

2. RESEARCH RELATING TO MIXED-GRADE CLASSES: COGNITIVE

There have been many individual studies of achievement in a **multi-age** (by choice) class. The type of class depends largely on the era when the study was carried out. In the 1960s and 1970s, for example, 'open education' was popular in the US and Australia. More recently, in the 1990s, multi-age classes in developed countries have been based on the theories of Piaget and Vygotsky, who believe that children learn through interactions in their environment. As social constructivists, they both support an active, student-centred classroom where children progress

at their own individual rate and learn through problem-solving activities and social interaction. While the type of multi-age class has changed over time, the underlying philosophy has not. Multiage-by-choice teachers believe that 'peers in multiage classrooms can facilitate development by assisting children in moving to the next level of understanding' (Bacharach, Hasslen & Anderson,1995, p.10). In other words, diversity is essential so that there will always be a wide range of expertise and skills in the class. Children regularly work with both older and younger peers.

Numerous individual studies show either the same or improved achievement scores from children in multi-age and nongraded classes (e.g. Anderson & Pavan, 1993; Goodlad & Anderson, 1987; Milburn, 1981; Pavan, 1992). In these classes students are not classified by grade and curriculum is 'developmentally appropriate'. Assessment is a continual process and curriculum is adapted accordingly. The teacher usually teaches the class for several years or even permanently, which allows accurate assessment of a student's learning needs. In other words, students do not necessarily engage in activities according to their grade syllabus — for some subjects they might work at a higher grade level and for some subjects they might work at a lower grade level.

Many studies also show improved achievement in **multi-grade** classes (Gayfer, 1991; Miller, 1991; Vincent, 1999). Gayfer, for example, reports the positive findings of many Canadian studies: one comparison of 4407 students concluded that 'the achievement of multi-grade students was significantly higher in vocabulary, reading, mathematics problem-solving and mathematics total' (Gayfer, 1991, p.16). Other reports 'consistently showed that multi-grade students demonstrate outcomes that are at least equal to those in single grades, and … research reviews consistently fail to find any better achievement in single-grade classes' (Gayfer, 1991, p.16).

As well as individual studies, the literature contains meta-analyses and best evidence syntheses which combine a number of studies in order to come to a justified overall conclusion (e.g. Gutiérrez & Slavin, 1992; Slavin, 1987, 1990; Veenman, 1995, 1996). Veenman's analysis has been the most wide-ranging, both geographically and in terms of the types of mixed-grade classes analysed. He reports his results in two categories of classes and two categories of factors: multi-age and multi-grade classes, and cognitive and non-cognitive factors. While differences in terminology can be problematic in the studies he analysed, Veenman posits the general conclusion that 'students in multigrade classes learn as much as their counterparts in single-grade classes' (1995, p.350) and 'multi-age classes appear to be generally equivalent to single-age classes' (1995, p.362).

Nevertheless the evidence in terms of student achievement in some mixed-grade classes is disputed by other authors, and here the precision of terminology is crucial. One type of multi-grade class is the permanent mixed-grade class found in a rural school. Another type is the class, usually a two-grade class, formed in an urban (regional or city) school to cater for uneven grade enrolments in any particular year. Such classes are called **composite** classes in Australia and **combination** classes in the US and they are often temporary classes. They come and go on an annual basis depending upon the existence of 'leftover' students once the single-grade classes have been formed. Many schools have fluctuating enrolments for myriad reasons, including population mobility, reputation, and demographic change such as change in the birth rate or in the socio-economic make-up of the surrounding population.

Authors who dispute the 'no difference' finding for achievement in multi-grade and single-grade classes are primarily those who have carried out research in composite or combination

classes in developed countries, where the level of teacher education is high and resources are plentiful (Burns & Mason, 2002; Mason & Burns, 1995, 1996, 1997; Mason & Doepner, 1998; Mason & Good, 1996). Mason and Burns (1996), for example, have suggested that the result of 'no difference in achievement' between multi-grade and single-grade classes is not because negative factors do not exist but because positive and negative factors balance each other out. The positive factors include 'selection bias': 'There is considerable evidence that principals, in an effort to reduce the burden on multigrade teachers, place more able, more independent, and more cooperative students in multigrade classes' (p. 311) and 'In addition to evidence that principals create favorable class compositions in multigrade classes, there is evidence, though more sketchy, that better teachers are assigned to these classes' (p. 312). On the negative side of the balance is the lower quality of instruction which the authors claim results from the extra demands made on the teacher. Because the class contains two grades, the teacher must follow two curricula alternately with one grade and then the other, with the result that 'teacher stress is exacerbated, and curriculum coverage and adaptive assistance are diminished, with negative outcomes' (p. 315).

This last finding is particularly relevant to multi-grade, rural-area classes in developing countries. In these contexts, teacher education can be poor and is likely to be entirely focused on the urban single-grade context. The multi-grade classes are usually two-grade, but a teacher might have responsibility for more than one such class, necessitating movement between different classrooms. Syllabus requirements for each grade are specific and inflexible, as are testing procedures. Resources including support for the teacher are often inadequate. In these cases, the negative factors described by Mason and Burns (1996) are not counter-balanced by any positive factors such as selection bias. In spite of these conditions, Veenman claims that a re-analysis of his data (following criticism from Mason and Burns) provided 'little support for the assumption that the quality of instruction in multigrade classes is lower than in single-grade classes' (1996, p.323).

3. RESEARCH RELATING TO MIXED-GRADE CLASSES: NON-COGNITIVE

Studies relating to non-cognitive factors such as socio-emotional development, self-concept and liking for school have consistently reported favourable findings for children in mixed-grade classes. Pavan (1992) and Anderson and Pavan (1993) reported that students in nongraded (multi-age) classes performed as well or better than their graded counterparts in mental health and attitudes towards school, while Gayfer (1991, p.14) writes that 'researchers generally agree that students in multi-grade classes tended to be higher than those in single-grade classes in the following affective areas: study habits, social interaction, self-motivation, co-operation, and attitudes towards school'. The following non-cognitive factors have also been identified as comparable or superior in multi-grade classes (Gayfer, 1991, p.15): independence, dependability, confidence, responsibility, co-operation with others, interaction skills, social skills, study habits and attitudes towards school.

As mentioned above, Veenman's meta-analysis also reported findings for non-cognitive factors. He concluded (1995, p.367) that 'in affective areas such as attitudes towards school, self-concept, and personal and social adjustment, students are sometimes better off in multigrade classes than in single-grade classes'. His finding in relation to non-cognitive effects in multi-age classes was statistically stronger, showing 'a small positive effect' (p.366).

4. TEACHING A MIXED-GRADE CLASS

The discussion above highlights the importance of being able to determine how a teacher actually teaches a particular class. When terminology is not precise, description and inference are necessary to understand the teacher's approach. Labels are a starting point but what goes on inside the classroom is more important than the label given to the type of class. If a composite class teacher knows her students are likely to be in a single-grade class the following year, for example, she is unlikely to deviate significantly from the separate grade syllabi. She needs to ensure that her students cover the same work as their peers in single-grade classes so they are not disadvantaged the following year when they rejoin those peers. On the other hand, if a teacher always teaches a composite class with the same two grades, then he will perhaps arrange the students in cross-grade groups for at least some of their work. A student who needs remediation, for example, can work with the younger-grade students to get the extra help required for his or her learning. The context significantly influences the teacher's approach; in particular, I argue, the temporary vs permanent nature of the class seems to be the crucial variable.

Multi-age teachers choose to teach a mixed-grade class. They have well thought-out beliefs about learning and the importance of interaction with older and younger peers. They are not constrained by grade syllabi; instead, they group students according to their learning needs. There is an emphasis on cooperative learning and the groups change frequently according to the teacher's judgement about an individual's learning needs in a particular subject.

Multi-grade teachers in rural schools in developed countries are somewhere inbetween these examples of multi-age and composite class teachers. They often do not have large numbers of students so their grouping options are reduced. On the other hand, their class is permanently multi-grade and often covers three or more grades so they do group the students when they can, including for whole-class activities. They know their students well because they usually teach them for several years. Because of this continuity of both teacher and students in the class, a focus on individual learning needs is possible. A teacher can be more flexible with provisions for a student's learning because adjustments can be made the following year if necessary.

Teachers with some experience of multi-grades classes have stated that the environment prompted them to change their teaching styles (Gayfer, 1991, p.13). When a teacher teaches a particular student for several years, then the student's individual learning needs become obvious to the teacher who as a consequence might have to deviate from rigid syllabus requirements to provide for these needs. The challenge for multi-grade teachers in developing countries is how to make these adjustments within a context of strict government requirements in terms of textbooks, syllabi and assessment. A stated focus on student-centred learning is not congruent with such rigid requirements. In the following section, some strategies commonly used in multi-age and some multi-grade classes are briefly described. Their application in any teacher's classroom will depend upon the local constraints faced by that teacher. Some strategies can be adopted and some can be adapted but in other cases it might not be possible to use a particular strategy unless more freedom is given to the teacher to make professional judgements relevant to the individual context.

5. COMMON MIXED-GRADE STRATEGIES

The following strategies are selected and summarised from those presented in Cornish (2006a, 2006b): split timetable or subject stagger, common timetable, curriculum alignment with some whole-class teaching, whole-class teaching for the whole period, curriculum integration/theme-

based teaching, spiral curriculum, curriculum rotation, within-grade grouping, cross-grade grouping, peer tutoring, and open-ended activities. For simplicity, a two-grade class will be described.

Split timetable or subject stagger

Most multi-grade and composite class teachers plan for and teach the different grades separately. With a split timetable, the students in one grade work to a timetable different from the students in the other grade — the timetable is split and their subjects are staggered, so while one grade is working on mathematics, say, the other grade is working on language. The teacher works with one grade, then the other. Two completely different lessons are planned but both have to be managed at the same time. One way to reduce the demands on the teacher is for one grade to work on a subject which is less likely to require constant teacher input while the other grade works on a teacher-intensive subject. An advantage of the split timetable is that scarce resources can be utilised more efficiently, since they are only required by one part of the class at a time.

Common timetable

Under a common timetable arrangement, both grades in a class work on the same subject at the same time. The teacher still prepares different lessons for the different grades but has to spend less time getting resources ready (assuming it is easier to get two lots of mathematics resources ready than mathematics and, say, social studies resources). Classroom management is often easier when all students are working on the same subject, as equipment needs are likely to be similar, and there is potential for a student in the higher grade to help a student in the lower grade. When students are working on different subjects, they might have different equipment needs or might need to move to different parts of the classroom or school, with the potential for disruption.

Curriculum alignment with some whole-class teaching

With a common timetable, the likelihood for at least some whole-class teaching is increased. When looking at the topics within each grade for, say, social studies or science, a teacher can often see that some topics are similar for each grade. One grade might need to learn about life cycles and the other grade might need to learn about insects or some other type of animal (e.g. sea animals, farm animals, spiders). In such a case, a teacher might give the whole class the same introduction to a lesson. In this way, the teacher revises material for some students while introducing it to others. The introduction serves the purpose of consolidation, revision and focusing for one grade and introduction and advance organiser for the other grade. After the introduction, each grade completes activities relevant to their syllabus. Some of the resources required for each grade's lesson, such as information books, will be the same thus reducing the teacher's preparation time.

Similarly, the teacher might combine the two grades at the conclusion of the lesson. The conclusion might consist of some students from each grade reporting what they did and what they learnt, and a summary by the teacher containing information relevant to each grade.

Whole-class teaching for the whole period

Sometimes both grades can be combined and taught as a single class for the whole lesson, which is called 'subject grouping'. Subjects such as music, physical education, art and craft,

drama, social studies and science can sometimes be taught successfully to the whole class at once. When students are all required to learn the same song or the same physical skill, it obviously makes sense for the whole class to learn at the same time. Less obviously, when curriculum alignment shows that some topics are very similar, the teacher can often teach the whole class and prepare one set of materials for activities, even if the older-grade students have to complete all activities while the younger-grade students are only expected to complete a proportion of the activities.

Curriculum integration/theme-based teaching

Related to curriculum alignment and whole-class teaching is the strategy of curriculum integration or theme-based teaching. This strategy involves planning activities in a range of different subject areas (language, mathematics, art and craft, and so on) to explore different aspects of the theme.

Such an approach is useful in any class but very useful in a mixed-grade class, for four main reasons (Cornish, 2006b, p.28): (1) it allows learning to be more meaningful and connected, (2) it allows a crowded curriculum to be covered more easily, (3) topics can quite easily be spiralled so that all students learn about the same theme but different students learn at different levels, and (4) a range of different activities can be planned for each theme. Thus integrating the curriculum or teaching in themes helps a teacher to cater for diversity in the classroom.

Spiral curriculum

A mixed-grade teacher can use curriculum alignment and themes/integrated curriculum because different syllabi for the same grade have some overlap of topics or desired learning outcomes. Such overlap is sometimes also a feature of syllabi for different grades, because topics are introduced in a lower grade, then re-introduced and extended in a higher grade. This increase in complexity each time a topic is studied is a feature of a spiral curriculum and makes it possible to teach two or more grades together in the way described above for whole-class teaching.

Curriculum rotation

More creatively, a teacher can often change the order in which students learn required topics in order to teach them together as one class. If a teacher has the same class for two years, then he could teach everyone a lower-grade topic one year and then teach everyone a higher-grade topic the following year. By rotating the curriculum in this way, the teacher ensures that all students learn both topics but they learn them in a different order. Many science and social studies topics lend themselves to this sort of arrangement. In Australia, many multi-grade rural schools plan their science and social studies topics on a two-year rotation in just this way, across the whole school, with some topics allocated to the ‘even’ years (e.g. 2008) and other topics allocated to the ‘odd’ years (e.g. 2009). This ‘curriculum mapping’ exercise (Jacobs, 2004) is essential planning for all schools but particularly for schools with mixed-grade classes.

Within-grade grouping

Ability groups can be used to reduce the diversity when this is thought to be important for learning. Many teachers like to use ability groups in mathematics, for example, with students divided into high, medium and low groups which then complete different activities. In a multi-grade class where the teacher is following at least two different syllabi, the thought of also preparing different activities for groups within each grade can be daunting. Grouping does not

have to involve significant extra work, however. With careful planning, group activities can often be implemented where all students are engaged in the same activities but different students achieve different outcomes. Sometimes the high achievers would complete all the planned activities while the low achievers only complete some of the planned activities. In other cases, all students complete the same activity but the teacher has different expectations for different groups of students.

Groups do not have to be based on ability to be successful and in fact the opposite is often the case. Multi-age teachers believe heterogeneous groups are beneficial for learning because they allow students to learn from their peers. Research on genuine cooperative learning is strongly positive in terms of its beneficial effects (Gillies & Ashman, 2003; Johnson & Johnson, 1989, n.d.). Examples of activities suitable for heterogeneous group learning include making a book to read to the other grade (planning, writing and illustrating the story, then constructing the book); preparing and performing a drama skit; completing a design and construct activity and describing the process orally to the whole class; carrying out a science experiment; completing a mathematics problem-solving exercise; and preparing a report and presentation on a social studies topic.

Cross-grade grouping

Cross-grade groups can also be homogeneous (ability-based) groups or heterogeneous groups. If a teacher wants students who have a similar level of achievement to work together, then increasing the pool of students by going beyond one grade makes it more likely that students will be well matched. Multi-age teachers regularly form cross-grade groups and these groups change from subject to subject and activity to activity, depending on the teacher's purpose in forming the group.

Peer tutoring

Often an explicit purpose of forming groups, both within-grade and cross-grade, is to allow students to learn from each other. Peer tutoring involves one student teaching another student, whether formally or informally. Much informal 'learning from each other' occurs in mixed-grade classrooms and especially in group activities. A benefit is that individual students do not have to wait for scarce 'teacher time' when they need help to proceed. Many mixed-grade teachers, both multi-age and multi-grade, also set up formal peer tutoring situations, where an older student explains something to a younger student or helps another student with a specific activity. Explaining something to someone else has been shown to be beneficial for both the learner and the tutor (Vincent, 1999).

Open-ended activities

A teacher who decides to implement grouping soon learns that the strategy is not very successful with closed activities, i.e. activities where a specific result is expected. One student soon gets the answer and simply tells the rest of the group. This situation is not helpful for the students who are told the answer, and the group then has to wait until the teacher is ready to move on to the next activity. An open-ended activity, on the other hand, has many possible outcomes and/or many possible ways of reaching an outcome. The ideas of more than one student might be valid. Thus students need to discuss, argue, explore, decide, negotiate, justify and interact. They will be involved in the learning process. Even multi-grade teachers who are following a single-grade syllabus can design open-ended activities for within-grade groups. The

groups learn to be responsible for their own learning to a greater extent than in a highly teacher-directed classroom, which is an added benefit for both the teacher and the learners.

6. CONCLUSION

The most common types of mixed-grade class are multi-age and multi-grade. Both types of class are permanent but are formed for different reasons — multi-age by choice and multi-grade by necessity. Multi-age teachers believe that learning is improved by the increased diversity in the class. They use a variety of strategies to provide 'developmentally appropriate' curriculum for all their students according to their particular learning needs. Multi-grade teachers can also use many of these strategies, even when constrained by grade requirements, to improve their students' learning. Strategies most useful and adaptable for a multi-grade class in a rural context are those that allow for as much whole-class teaching as possible. The increased number of grades in these classes makes separate grade teaching very difficult and inefficient. With separate grade teaching, teacher time with each grade is necessarily reduced; independent textbook work is necessarily increased and learning through social interaction is thus decreased. Successful rural teachers must be excellent planners — planning theme-based lessons with tiered and open-ended activities incorporating different types of grouping, to allow class-based rather than grade-based learning.

REFERENCES

Anderson, R.H. and Pavan, B.N. (1993) *Nongradedness: Helping it to happen.* Lancaster, PA: Technomic Publishing Co.

Bacharach, N., Hasslen, R.C. and Anderson, J. (1995) *Learning Together: A manual for multi-age grouping*. Thousand Oaks, CA: Corwin Press (Sage).

Burns, R.B. and Mason, D.A. (2002) Class Composition and Student Achievement in Elementary Schools. *American Educational Research Journal* 39(1), Spring, 207–233.

Cornish, L. (2006a) What is multi-grade teaching? Chapter 1 in L. Cornish (ed.) *Reaching EFA through multi-grade teaching: Issues, contexts and practices.* Armidale: Kardoorair Press.

Cornish, L. (2006b) Multi-age practices and multi-grade classes. Chapter 2 in L. Cornish (ed.) *Reaching EFA through multi-grade teaching: Issues, contexts and practices.* Armidale: Kardoorair Press.

Cornish, L. and Garner, J. (2008) *Promoting student learning.* Sydney: Pearson Education.

Gayfer, M. (ed.) (1991) *The Multi-grade Classroom: Myth and Reality; A Canadian Study*. Toronto: Canadian Education Association.

Goodlad, J.I. and Anderson, R.H. (1987, revised edn.) *The non-graded elementary school.* New York: Teachers College Press.

Gillies, R.M. and Ashman, A.F. (2003) *Co-operative learning: The social and intellectual outcomes of learning in groups.* London: RoutledgeFalmer.

Jacobs, H.H. (2004) *Getting Results with Curriculum Mapping.* Alexandria, VA: Association for Supervision and Curriculum Development.

Johnson, D.W. and Johnson, R.T. (1989) *Cooperation and competition; Theory and research.* Edina, MN: Interaction Book Company.

Johnson, D.W. and Johnson, R.T. (n.d.) An overview of cooperative learning. Available online at: www.cooplearn.org/pages/cl-methods.html

Lloyd, L. (1997) Multi-age classes: An option for all students? *Australasian Journal of Gifted Education* 6(1), 11–20.

Lloyd, L. (1999) Multi-age classes and high ability students. *Review of Educational Research* 69(2), 187–212.

Mason, D.A. and Burns, R.B. (1995) Teachers' Views of Combination Classes. *The Journal of Educational Research* 89(1), Sept./Oct., 36–45.
Mason, D.A. and Burns, R.B. (1996) 'Simply No Worse and Simply No Better' May Simply Be Wrong: A Critique of Veenman's Conclusion about Multigrade Classes. *Review of Educational Research* 66(3), 307–322.
Mason, D.A. and Burns, R.B. (1997) Reassessing the effects of combination classes. *Educational Research and Evaluation* 3(1), 1–53.
Mason, D.A. and Doepner, R.W. (1998) Principals' Views of Combination Classes. *The Journal of Educational Research* 91(3), Jan/Feb, 160–172.
Mason, D.A. and Good, T.L. (1996) Mathematics Instruction in Combination and Single-Grade Classes: An Exploratory Investigation. *Teachers College Record* 98(2), 236–265.
Milburn, D. (1981) A study of multi-aged or family-grouped classrooms. *Phi Delta Kappan*, 62, 513–554.
Miller, B. (1991) *Teaching and learning in the multigrade classroom: Student performance and instructional routines*. ERIC Digest. Charleston, WV: Eric Clearinghouse on Rural Education and Small Schools. ED335178. Retrieved 8 January 2008 from: http://www.ericdigests.org/pre-9221/teaching.htm
Pavan, B.N. (1992a) The benefits of nongraded schools. *Educational Leadership* 50(2), 22–25.
Pavan, B.N. (1992b) Nongradedness: Not simply a grouping scheme. *Educational Leadership* 50(2), 25.
Pratt, D. (1986) On the merits of multiage classrooms. *Research in Rural Education* 3(3), 111–115.
Spielmann, P.J. (2008) Global leaders pledge $4.5b to send kids to school. Associated Press. Accessed 30 September 2008 from: http://ap.google.com/article/ALeqM5jkHqwsWPI8KQrmdABm0-RwbBYIdQD93E32NG1
Veenman, S. (1995) Cognitive and Noncognitive Effects of Multigrade and Multi-age Classes: A Best-Evidence Synthesis. *Review of Educational Research* 65(4), 319–381. Veenman, S. (1996) Effects of Multigrade and Multi-age Classes Reconsidered. *Review of Educational Research* 66(3), 323–340.
Veenman, S. (1997) Combination classrooms revisited. *Educational Research and Evaluation* 3(3), 262–276.
Vincent, S. (ed.) (1999) *The Multigrade Classroom; A Resource for Small, Rural Schools*. Portland, OR: Northwest Regional Educational Laboratory. Based on Miller, B. (1989) The Multigrade Classroom. Online at: http://www.nwrel.org/ruraled/publications/multig1.pdf

GIVING CONTINUING PROFESSIONAL EDUCATION MORE IMPACT: ADDING BHUTAN-RELATED CLASSROOM PRACTICES IN AUSTRALIA AND ACTION RESEARCH IN BHUTAN TO THE BHUTANESE MULTIGRADE ATTACHMENT PROGRAM (BMAP) – PARTICIPANTS' PERSPECTIVES.

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ABSTRACT

Multigrade teaching was introduced to Bhutan to address the Education for All (EFA) goals. Multigrade schools are those rural schools in which a teacher must teach more than one grade in a class and sometimes all grades from K to 6. The Bhutanese Multigrade Attachment Project (BMAP), involving a phase in Australia and another in Bhutan, was commenced in 1993. Two major changes occurred during the 16 years of implementation following an essentially "one shot" model of continuing professional development (CPD) of the early years. A range of data from these two changes were analysed indicating that the BMAP had had an impact upon the majority of participants. The features of BMAP are identified.

Keywords: ***continuing professional development, Bhutan, remote education, multigrade, impact.***

1. INTRODUCTION

The Bhutan Multigrade Attachment Program (BMAP) was developed to improve multigrade teaching in remote rural schools in Bhutan. The BMAP has two main capacity building phases that have not changed: (1) six weeks in Australia and (2) a period of several months upon participants' return (see Maxwell, 2001, 2008; www.une.edu.au/education/community_ involvement/bhutan/index.php). The six weeks that the Bhutanese teachers spend in Australia focus upon observing Australian multigrade teaching practices and obtaining practical materials. In this first phase, two school placements of Bhutanese teachers in pairs are undertaken in rural communities of about seven working days each (Maxwell, 2001, 2008). On return to Bhutan, participants try out ideas learned in Australia. It should be noted that Australian multigrade practices are challenging to Bhutanese teachers who are used to teaching to the whole class (Maxwell, 2007). Other barriers make multigrade teaching difficult in Bhutan yet is it important as a vehicle to achieve Bhutan's EFA and Millenium Development goals. Broadly CPD in multigrade remains a very relevant classroom practice issue for Bhutanese teachers. One third of schools in Bhutan are multigrade schools.

The BMAP is unusual because not often do CPD programs continue for such a long period. During their time in Australia the Bhutanese teachers observe and also practice multigrade strategies using concepts and materials with which they are familiar. Formal and informal discussion was structured into the program with classroom teachers and University of New England academics. Relevant research findings are provided. Examples of good practices can be directly observed. Each individual selects ideas to adopt or adapt to their own situation. They are thus in control of their own CPD. On return to Bhutan the teachers attempt to incorporate teaching practices from Australia by either adopting or adapting ideas. A certificate, together with individual feedback, is awarded for completion of both phases.

Two major changes in BMAP are the foci of this paper. In 1998 action research (AR) was introduced. Trials of ideas in Bhutan were scaffolded using AR learned in Australia. The second major change occurred in 2006 when materials focused upon Bhutan's environment were developed for Bhutanese teachers to use in Australia. More particularly the paper addresses the impact of these changes on participants. Previously, Maxwell (2008) presented preliminary data on the impact of BMAP but he indicated that further research was needed to address the issue of impact by BMAP on participants. He found that Ministry of Education and funding body decisions to keep the BMAP going over more than a decade indicated that BMAP had had an impact from the point of view of two key stakeholders. Evidence from a sample of AR reports analysed using *Leximancer* software was less conclusive though the UNICEF evaluation in 2001 (Munce Report) was positive about BMAP. The Maxwell paper and this one address the issue of CPD impact.

2. MODELS OF CPD

The BMAP two phase model contrasts directly with the "one shot" model of CPD which has been heavily criticised (Garet, Porter, Desimone, Birman, & Kwang, 2001; Goldenberg & Gallimore, 1991; Maxwell, Bennett, Freebody, Grundy & Sanche, 1988). "One shot" models usually have a single, short out-of-school experience most often directed by an "expert". Little or no follow up usually takes place. Invariably participants enjoy the experience but not much change takes place back in the classroom following the CPD. So, impact is usually low.

One shot CPD contrasts strongly with more successful models. Cordingley, Bell, Rundell & Evans (2003, 4) identified six features that were common to successful CPD programs:

- observation with professional dialogue including *feedback***;**
- the use of external expertise linked to school-based activity;
- an emphasis on *peer support* rather than leadership by supervisors;
- scope for teacher participants to identify their own CPD focus;
- processes to encourage, extend, and structure professional dialogue; and
- processes for sustaining the CPD over time to enable teachers to embed the practices in their own classroom settings [their emphasis].

In addition to these features Ingvarson et al. (2005) identified the following foci on:

- what students were to learn and how to deal with the problems students may have in learning that subject matter;
- research-based knowledge about student learning of content;
- active reflection on their practice and comparisons with high standards for professional practice; and
- time for teachers to test new teaching methods.

These points have much in common with the BMAP model. However, in BMAP there was no follow up and coaching in the second phase although feedback was given to those teachers who completed their AR report. Combinations of these characteristics have been found to be consistent with those examples of CPD that have an impact (see Ingvarson et al., 2005; Loucks-Horsley, Love, Stiles, Mundrey, & Hewson, 2003; Garet et al., 2001; Rolheiser, Ross

& Hogaboam, 1999; Maxwell & Paterson, 1995; Ross, 1994; Barrett & Kepler, 1991; Halpin, Croft & Redman, 1990; and Maxwell, Bennett, Freebody, Grundy & Sanche, 1988).

3. MUNCE REPORT

The Munce Report (2001) was a UNICEF (Australia) evaluation of the BMAP covering the period 1993 to 2001). Munce, a UNICEF Officer, completed the report following interviews in Australia and an extensive visit in Bhutan. Broadly, the Report stated "It is undeniable the attachment [BMAP] is a highly valued and appreciated experience for teachers and certainly many teachers have had success in implementing a range of ideas adopted/adapted from their Australian experience" so, overall, Munce viewed BMAP positively. Nevertheless, recommendations directly relevant to the Australian component of the BMAP were identified. These should be:

1. Enhanced briefing by a multigrade specialist before entering schools, on Australian content and teaching practices, to provide a contextual framework for their observations;
2. More formal training in multigrade and less observation – more structured reflection at UNE following each attachment – more assistance in interpreting their observations;
3. Preference to stay with teachers rather than other families, to enable ongoing discussion;
4. Opportunity for participation in lesson planning and hands on teaching; and
5. Extension of first placement and reduction of second (Munce, 2001, p. 11-12).

Following the publication of the Munce Report, these recommendations were addressed at UNE. In addition to specialist multigrade lecturer input, an expert in multigrade teaching and learning practice provided sessions at UNE and in schools including lesson planning based upon Bhutan's aligned curriculum for multigrade that was produced subsequent to the Munce Report. More structured observations were implemented and followed up and, from 2006, more emphasis was placed on multigrade teaching practice using materials developed for this purpose (see section 5 below). Accommodation with teachers during attachments was preferred but was not always available and changes were made to the duration of school attachments as requested.

The Munce Report also raised questions about the sustainability of CPD efforts to improve multigrade teaching in Bhutan and the dissemination of the ideas gathered by the BMAP teachers. The major ongoing difficulty noted in the Report was the need for planning multigrade lessons and the integration on subject matter from curriculum documents. Bhutanese teachers in multigrade schools were seen to face syllabus rigidities, inadequate time for revision, restricted classroom space and structures, lack of resources, large class sizes and teaching overload. There have been strenuous efforts in recent years to improve Bhutanese curriculums (Dorji, 2005).

One additional point made by the Munce Report that still has relevance and may be adopted with reasonable effort and cost in Bhutan: "There is no reason … why model multigrade classrooms cannot be established in Bhutan at district or cluster level, so that teachers can observe 'best practice' locally, which also would be more immediately transferable, and more cost effective" (p. 17). However, the Ministry responded in a number of ways by, for example, producing an aligned curriculum and arranging for the Royal University of Bhutan to add multigrade modules to its BEd by a distance education program.

4. ACTION RESEARCH IN BHUTAN FROM 1998

There were two major moves in BMAP to improve its impact; the introduction of action research prior to the Munce Report and the introduction of materials relevant to the Bhutanese to use in Australian multigrade classrooms (see section 5. below) afterwards. Action research was introduced into the BMAP in order to move it away from the one shot model extant prior to 1998. AR classes are run over the last three days of the BMAP in Australia, that is, after the second school community visit and so after the final ideas for adoption or adaptation have been decided upon. Classes became more structured over time such that:

- After the initial two years the AR became more scaffolded including the development of the reconnaissance (Maxwell, 2003);
- From 2002 the emphasis was upon quality trials of adopted and adapted ideas leading to less ideas being formally tried;
- Models of completed AR reports by BMAP and UNE interns were provided; and
- By 2006 classes included the development of AR questions and action plans following the matrix idea that had been developed (see Smyth & Maxwell, 2008).

In other words, the instruction became more and more focused to learners' needs.

AR reports from participants provide clear evidence, or otherwise, of the work that was carried out in Bhutan following the first phase of the CPD in Australia. Some participants completed more than one cycle and sometimes more than one substantive area. Some early reports used the first cycle as a way of establishing baseline data and the reports were interpreted in this way.

The analysis addressed three questions:

1. "Did the cycle produce credible improvement data?"
2. "Is the substantive content about multigrade teaching and learning?"
3. "What self reflective comments indicated impact, or otherwise, on CPD of participants?"

Together these questions address the issue of impact of BMAP.

All AR reports (N=78) from the years 1998-2007 (2003 was not available) were analysed for impact. Six reports (1998 (3), 2000 (2) and 2007) were not AR. "Analysed" means here read carefully to identify categories of evidence and substantive content of cycles. The unit of analysis was the action research cycle. "Credible" data were triangulated over time. That is, at least baseline and end of cycle data were included from three data sources/methods. "Some evidence" included before and after observational data but no triangulation. Sometimes there were no baseline data. "No evidence" meant claims of improvement were made that were unsubstantiated. In terms of the substantive content of the AR, "directly" meant specific practices that could only be applied to multigrade classrooms, e.g. multigrade planning or cross-class group practices. The category "general learning/teaching strategy", e.g. ability grouping, positive re-inforcement, recognizes Bhutanese teachers' long history of teaching to the class as a group (Phuntsho, 2000; Maxwell, 2007). Teaching practice in Bhutan is largely teacher- and not student-centred. Thus any additional practices learned and tried out were seen as improvements and thus indicting impact. This is consistent with the view of Cornish (2006, p. 18-21) that student-centred practices can be routinely applied successfully in monograde as well as multigrade classes. However, the improvement chosen was sometimes outside multigrade concerns. Thus "Unrelated" meant an improvement that was not directly related to learning and

teaching, e.g. community involvement. Additionally, specific comments were identified which exemplified more explicit statement of improvement by the BMAP teachers themselves. The final AR "moment" is reflection. Some participants took the opportunity to go beyond this, i.e. to reflect upon the experience of AR as CPD. Self reflections can be acknowledged as a form of impact.

Reports varied from two to seven pages. The quantitative analyses clearly indicate that there was credible evidence of impact in 27 of the 140 cycles (Table 1). Including the less stringent criterion ("some") means that 94 additional cycles provided some evidence. Nineteen of 140 cycles simply made claims of improvement. Certainly in about 20% of cycles and, less confidently, another 60% provided evidence that some improvements in their practices had taken place. BMAP thus had an impact with respect to data indicating improvement.

Table 1: Evidence of impact and substantive area of improvements in 78 BMAP reports (N=140 AR cycles)

Improvement evidence			Substantive area		
Credible	**Some**	**None**	**Directly**	**General**	**Unrelated**
27	94	19	19	118	3

Almost all BMAP teachers addressed issues related to classroom practice but only 19 of the 140 cycles directly addressed multigrade practices such as across grade peer tutoring and ability grouping across grades (Table 1). The vast majority of cycles concerned general teaching practices related to more student-centred learning. Unrelated multigrade practices included hygiene and playground cleanliness. BMAP thus had an impact on what was learned and tried out.

During the analysis it was possible to pick out BMAP teachers' self reflections upon their own improvement. There were no negative comments. These data do not signify a lot as it is not culturally appropriate to make negative comments. However, many overall comments about AR and CPD were positive and what is important here is the strength of the comments.

> *I never thought that I could contribute such a wonderful thing. (1999)*
>
> *Some of these ideas put as action research cycle amongst others helped me a lot to grow professionally as a teacher. (2000)*
>
> *During the AR cycle … my professional practice has changed considerably but more importantly my beliefs about teaching maths and how to teach [have] changed. (2001)*
>
> *I clearly see a change in their reading habit … [BMAP] helped me a lot in grow[ing] professionally as a teacher. (2004)*
>
> *The training made me confident and capable to tackle the difficult situation in remote schools of Bhutan like Berdungma. (2007)*

These positive comments were made despite the difficulties participants experienced including large class numbers and the classrooms being too small. For example, one BMAP participant in 1999 got off the bus and walked "four strenuous days" from the road head to join the three other teachers and 205 students in a boarding school for which the participant was also responsible. Furthermore, a small number indicated that they had run in-service sessions for their school staff. Others indicated that they would take what they had learned to national in-service days

held each year in multigrade education. BMAP thus had an impact in terms of the participants' unsolicited reflections.

In this section three forms of data from the AR reports give very strong indications that the BMAP model has successfully changed teaching practices. BMAP has had an impact, not on all, but certainly on a considerable proportion of those participating.

5. BHUTAN-RELATED CLASSROOM PRACTICES IN AUSTRALIA FROM 2006

A major change to BMAP addressed Recommendation 4 of the Munce Report. A kit of resources was developed based on Bhutan's biodiversity. The BMAP teachers used these materials in all teaching placements from 2006 when in the Australian schools (Halloway, 2007).

The *Bhutan: Teaching About Biodiversity* (BTAB) materials were provided to the Bhutanese teachers at UNE prior to their school attachments with familiarisation sessions and advice for teaching about Bhutan's biodiversity in Australian schools. The BMAP teachers could teach any grade, in any subject area to individuals, groups or whole classes. They were also able to teach alone, in pairs or as a member of a teaching team as arranged with the Australian teachers. All Australian teachers and schools cooperated enthusiastically and facilitated this innovation. Generally, team teaching to multigrade groups of students was intended in the context of interdisciplinary units, such as "How can Bhutan's unique plants and animals be protected?"

The BTAB kit was used in all school attachments in 2007 and 2008 after trialling in 2006. Each BMAP teacher completed a questionnaire when they returned to UNE after each attachment (14 and 8 of respondents in 2007 and 2008 respectively, a 100% response rate each). There were 12 items seeking a response on a four-point scale. Comments were invited after each item. The items covered the usefulness of the BTAB kit, what the school children and Bhutanese teachers learnt from using it, how they planned their lessons, if they had grown in confidence from their teaching in the Australian schools and background information about their prior training and experience. In 2008 a questionnaire was also sent to schools asking for feedback on the use of the BTAB materials and the lessons taught by the Bhutanese. Five of eight teachers responded.

Teaching about biodiversity in Bhutan

Open-ended comments indicated that more work was needed in planning as Munce had previously indicated. Nevertheless, participants indicated they had planned carefully with or without the support of their mentor teacher.

> *We planned the lesson in group to do team teaching in English lesson. We received many helps from an Australian teacher like setting of CD, teaching materials and allocation of time for lessons. (2007)*

> *Introduction, information input, activities and closure. Lesson taught through team teaching. Assistance we received from Australian teacher was worksheets, grouping and classroom organization. (2007)*

> *Introduced the lesson using maps, followed by short visual aid using the CD [from the kit] and computer to keep the students on track. [This was] followed by a display on the board. The lesson was team taught. (2008)*

We planned exactly like we plan our lessons. We had incorporated topic, objectives, teaching aids, lesson development, information inputs, activities, monitoring and evaluation. It was a team teaching lesson and the Australian teachers helped us in management of the class, to carry out the activities and use the OHP. (2007)

The lesson was taught with the assistance from the [Australian class teacher] in preparation of learning activities and materials. The kindergarten and Year 1 children were asked to select four animals, colour and name them. In the higher grades the children were asked to name the animals and classify them into different kinds of animals by looking at their characteristics. (2008)

These data indicate that many Bhutanese teachers carefully planned lessons whereas the following data show that the materials produced within BTAB were very important in planning and teaching.

Usefulness of the BTAB materials

90% of the teachers in both 2007 and 2008 found the materials "very useful" or "extremely useful". Comments which illustrate this were: "Besides teaching about richness of biodiversity in Bhutan one can teach about rare species, endangered species, extinct species etc. There is scope for teaching any subject based in this material" (2007). In 2008 another said: "The teaching materials were very attractive and the children really liked it. The teacher had to just plan the lesson by looking at the materials." This means that BMAP participants were actively involved in teaching Australian multigrade classes. These experiences are invaluable in developing the confidence and skills required to implement new classroom strategies back in Bhutan.

Growth in confidence

A further measure of the benefit of actually teaching in Australian schools using the biodiversity materials can be gauged from the question about growth of confidence asked in the BTAB evaluations: "How confident do you feel now about teaching topics on biodiversity in Bhutan in your own school?"

In 2007 there was little change in the apparent level of confidence between the school attachments: 71% were "very confident" and 29% were "extremely confident" in the first attachment. In the second attachment 7% were "confident", 64% were "very confident" and 29% were "extremely confident". In contrast in 2008 a marked increase in the level of confidence was reported. In the first attachment 50% said they were "confident", and 50% reported being "very confident". In the second attachment 12.5% said they were "confident". 62.5% said "very confident" and 25% reported being "extremely confident". Confidence growth is illustrated by the following: "Through this teaching in Australian schools I have gained on how to go about teaching and how important a lesson on biodiversity in Bhutan [can be]" (2007) and "I feel very confident teaching [about biodiversity in my school in Bhutan] because I could use a variety of strategies and techniques" (2008).

Australian teachers' comments in 2008

Five out of eight Australian teachers' responded in writing to three evaluative items. Broadly they were supportive of the Bhutanese teachers' efforts. Three illustrative comments were.

They incorporated it into a 1.5 hour session about Bhutan – our older students had seen the kit on numerous occasions. Lesson about Bhutan was splendid.

Students gained a knowledge of biodiversity in Bhutan. It reinforced knowledge covered in recent science unit. Children were able to compare and contrast Australian and Bhutanese [biodiversity].

Bhutanese teachers should incorporate the kit into a whole lesson [sequence] – students are fascinated about the Bhutanese lifestyle, culture, traditions, ways, food and clothing.

Overwhelmingly the BTAB lessons were rated "highly successful" by the Bhutanese and Australian teachers. The BTAB materials enabled the Bhutanese teachers to extend their often passive observations in the schools prior to 2006 to active participation in classroom teaching in a variety of contexts. In summary, evaluations of the BTAB experiences in 2007 and 2008 elicited enthusiastic responses about the Bhutanese teachers' efforts and the materials in the kit.

6. DISCUSSION

In summary, our analyses give clear indications of impact. About 20% of AR cycles had credible evidence. Additionally, there was some evidence of impact in just over 60% of the cycles. Since evidence-based decision-making is not common in Bhutan (although testing is) and action research was a new concept for BMAP teachers, many BMAP participants were not able to provide credible evidence as such. However, we think that the "some evidence" was really a methodological problem rather than a substantive one. That is, impact occurred in the majority of cases from our analyses of the AR reports submitted. Furthermore, general teaching and learning strategies were implemented in the majority of cases. Again we view this as a positive impact since the addition of more student-centred strategies adds to the teaching and learning repertoire of the BMAP participants. About 15% of the cycles were directly concerned with multigrade. Moreover, many of the Bhutanese teachers gained in confidence in the latter years of the project as they used materials specifically designed for the purpose containing content that they knew (cf. Fullan, 1990) to teach Australian children who were usually interested. Self-reflective comments also support this conclusion.

From this evidence BMAP has adopted a model that is effective, indeed, has had an impact. This is especially the case in the latter years when structured teaching practice was introduced to the second placement of the Australian phase. In essence the BMAP model, to particularise the points about effective CPD above, included:

- observation with professional dialogue including feedback on placement in the first phase. An improvement would be the addition of dialogue in Bhutan perhaps at the end of the AR work;
- the use of external expertise in the form of academic and professional input linked to school-based activity;
- participants learned how to deal with the problems that were identified through the situational analysis of the AR, i.e. situated learning took place;
- professional, research-based knowledge about student learning was the focus of the AR;
- teacher participants chose their own CPD focus in BMAP that resulted in a full range of foci for the AR work;
- the AR process was used to encourage, extend, and structure professional dialogue;

- in-country, workplace-based AR sustained the CPD over time to enable BMAP teachers to embed practices in their own classroom settings;
- active, informal reflection on their practice occurred throughout as Bhutanese teachers compared their practices and attitudes to those of Australian teachers. AR itself is essentially reflective as obtaining meaning from the data collected is an essential part of AR;
- intrinsic and extrinsic motivation was built into BMAP; and
- time for teachers to test new teaching methods was evident in both phases. However, in Bhutan the demands of teaching in remote locations, with few resources, large class sizes and small classrooms makes this problematic. Nevertheless the majority of teachers completed AR reports more or less effectively.

There were difficulties also with this model. Cross-cultural capacity building is difficult as Munce observed. BMAP teachers sometimes could not overcome the vast resource difference between Australia and Bhutan despite our emphasis upon generic practices and low cost materials. Again, as Munce observed, peer support back home was limited. The fact that BMAP participants were used as resource persons for school, cluster, province and national-base in-service events meant that only few were supported.

7. CONCLUSION

The Bhutanese Multigrade Attachment Program has been funded for more than a decade. This itself indicates Bhutanese Ministry of Education's and the funding bodies' confidence in it (Maxwell, 2008). Its purpose has been to build the skills of multigrade teachers from rural and remote parts of Bhutan. The substantive areas where improvements were made included new teaching techniques that were more student-centred than previously used as well as new strategies for multigrade classes. We believe that there is sufficient evidence provided in the AR reports and in the evaluations of the in-class teaching using BTAB materials that indicate that the BMAP model of CPD had an impact upon the teaching practices of the majority of BMAP participants notwithstanding cross-cultural difficulties and other limitations. This study of CPD impact is the only one known where the CPD has extended over more than a decade.

REFERENCES

Barrett, L.A & Kepler, S.J. (1991). Impact of a Sustained Three-Year Program of In-Service on Teacher Effectiveness Using Knowledge of Teaching and Learning Styles, Classroom Environments and Observational Feedback. Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, April 3-7. (ED335342)

Cordingley, P., Bell, M., Rundell, B & Evans, D. (2003). The impact of collaborative Continuing Professional Development (CPD) on classroom teaching and learning, Centre for the Use of Research and Evidence in Education (CUREE), June 23. http://eppi.ioe.ac.uk/EPPIWeb/home.aspx?&page=/reel/reviews.htm Accessed 23/4/08.

Cornish, L (2006). *What is multi-grade teaching? In Reaching EFA through multi-grade teaching: Issues, contexts and practices*, Editor, Linley Cornish, Armidale, Kardoorair Press, pp. 9-26.

Dorji, J. (2005). *Quality of Education in Bhutan: The story of growth and change in the Bhutanese education system.* Thimphu: KTM Publisher.

Fullan, M. (1990). *The new meaning of educational change*, NY: Teachers College Press.

Garet, M.S., Porter, A.C., Desimone, L., Birman, B.F. & Kwang S. Y. (2001). What Makes Professional Development Effective? Results From a National Sample of Teachers. *American Educational Research Journa*l, 38(4), pp. 915-945.

Goldenberg, C. & Gallimore, R. (1991). Changing Teaching Takes More than a One-Shot Workshop, *Educational Leadership*, 49(3), pp. 69-72.

Halloway, W. (2007). Bhutan - Teaching about Biodiversity: A conservation and teaching materials and professional development project. Paper presented at the Annual Seminar of the International Society for Teacher Education, June 24-30, Stirling, Scotland, 10p.

Halpin, D., Croll, P, & Redman, K. (1990). Teachers' Perceptions of the Effects of In-Service Education, *British Educational Research Journal*, 16(2), pp.163-177.

Ingvarson, L., Miers, M. & Beavis, A. (2005). Factors affecting the impact of professional development programs on teachers' knowledge, practice, student outcomes and efficacy. *Education Policy Analysis Archives*, 13(10). Retrieved 23/4/08 from http://epaa.asu.edu/epaa/v13n10/.

Louckes-Horsley, S., Love, N., Stiles, K.E., Mundrey, S. & Hewson, P. (2003). *Designing Professional Development for teachers of Science and Mathematics*. New York: Corlin Press.

Maxwell. T.W. (2001). International Collaboration for In-service: The Bhutanese Multi-grade Attachment Program", *Asia-Pacific Journal of Teacher Education*, 29(3), pp. 289-296.

Maxwell, T.W. (2003). Action Research for Bhutan?, *Rabsel* III, pp. 1-20.

Maxwell, T.W. (2007). Bhutan. In *The Greenwood Encyclopedia of Children's Issues Worldwide: Asia and Oceania*, General Editor, Irving Epstein, Volume Editor, Jyotsna Pattnaik, New York, Greenwood Press, pp. 55-77.

Maxwell, T.W. (2008). Ten years of capacity building of Bhutanese multigrade teachers: An initial analysis of classroom action research reports and related data. *Proceedings of the ISTE Seminar 2008*, Armidale. (in press).

Maxwell, T.W., Bennett, A.J., Freebody, P., Grundy, S. & Sanche, R. (1988). Literacy teaching practice in the infant and primary years: A study of the ELIC program. *South Pacific Journal of Teacher Education*, 16(1), pp. 13-35.

Maxwell, T.W. & Paterson, M.B. 1995. "Long term impact of a multi-phase course: Perceptions of participants", in *CPE: An Emerging Professional Practice* (eds. Brennan, B. & Dymock, D.R.) Armidale, Dept. of Continuing Education, The University of New England, pp. 93-110 (reprint of Maxwell and Paterson, 1992).

Munce, C. (2001). Bhutan Multigrade Attachment Program – Project Evaluation: Final Report. Prepared for UNICEF Australia/AusAid, UNICEF Bhutan and the Royal Government of Bhutan. Sydney: UNICEF Australia, 32p.

Phuntsho, K. (2000). On the two ways of learning in Bhutan. Journal of Bhutan Studies, 2(2). Pp. 96-126. Downloaded 9th December, 2008 from http://www.bhutanstudies.org.bt/main/pub_detail.php?pubid=69

RGOB (Royal Government of Bhutan) (1999) *Bhutan 2020: a vision for peace, prosperity and happiness*, Thimpu: Planning Division, RGOB.

Rolheiser, C., Ross, J.A, & Hogaboam-Gray, A. (1991). Assessment in the Cooperative Classroom: Using an Action Research Enhanced Version of the Train the Trainer In-service Model To Impact Teacher Attitudes and Practices. ED30934.

Ross, J.A. (1994). The Impact of an Inservice to Promote Cooperative Learning on the Stability of Teacher Efficacy. *Teaching and Teacher Education*, (10), 4, pp. 381-394.

Smyth, R. & Maxwell, T.W. (2008). The research matrix: an approach to supervision of higher degree research. *HERDSA Guide Series*, Milperra, NSW, Higher Education Research and Development Society of Australasia.

"TEACHING IN THE COUNTRY WOULD NOT BE SO BAD"[1]: HOW MUCH DOES IT COST TO FIND OUT?

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ABSTRACT

Attracting and retaining high-quality teachers for rural and remote Australia continues to be a major issue for education departments and other teacher employing authorities. Historically, a wide range of incentives including extra salary, bonded scholarships and accelerated promotion have been used to staff rural schools. Expanding the number of pre-service teachers who experience teaching and living in a rural community first hand *before* they graduate may be another way to reduce problems of staffing of rural schools. Doing this would require addressing the costs for an individual to take a country pre-service placement. Using data from a national survey, the financial and personal costs of taking a rural pre-service teaching placement are quantified, together with the benefits and disadvantages, as a contribution towards achieving better resourced and more professionally designed rural pre-service teaching experiences.

Keywords: ***rural, pre-service teachers, costs***

1. INTRODUCTION

During 1999—2000, the Human Rights and Equal Opportunity Commission (HREOC) conducted a National Inquiry into Rural and Remote Education in Australia (HREOC, 2000a). The Commission found, among other things, that "most teacher training does not adequately equip new recruits with the skills and knowledge needed for teaching in rural and remote Australia" (HREOC, 2000b, p. 43). Consequently, HREOC recommended that:

> All teacher training institutions should require undergraduates to study a module on teaching in rural and remote communities, offer all students an option to undertake a fully-funded practical placement (teaching experience) in a rural or remote school and assist rural communities in the direct recruitment of new graduates for their schools. (HREOC, 2000b, p. 44)

Three questions about preparing teachers for rural schools and living in rural communities have been derived from the finding and the recommendation to structure this paper. First, what does a "fully- funded practical placement in a rural or remote school cost" for a pre-service teacher? Secondly, what "skills and knowledge [and advantages] for teaching in rural and remote Australia" are acquired from a rural placement? Thirdly, what are the disadvantages of taking a rural pre-service placement, and what might be done to reduce or eliminate them?

A survey conducted in 2006, using a nationally-based sample of pre-service teachers who had completed at least one rural placement and were still enrolled in a teacher education course, is the basis for analysing and considering the questions (see Appendix 1). In relation to quantifying the overall cost of a rural placement, two aspects are dealt with—financial, and those of a more personal kind like separation from family and partners.

[1] Quote from the pre-service country teaching costings survey responses

Pre-service rural teacher placements are a major, annual logistical exercise as well as being an injection of substantial 'limited-duration' additional resources into schools and communities. The placement process directly engages pre-service teachers, at least one or more of their lecturers, administrators who develop and maintain the infrastructure to enable placements to occur, often family members and partners, local communities and businesses and, very importantly, schools, staff and students. It is estimated from data in a national mapping of pre-service placements in Australia completed by the Rural Education Forum Australia (2005), that universities organise well in excess of 10,000 pre-service placements in rural schools annually.

The next section comprises the contextual framing for the paper. This is followed by a summary of the costs of taking a rural pre-service placement in terms of those which have a 'dollar value' and those of a more personal and relational kind. The perceived benefits and disadvantages of a rural pre-service placement are then considered. The paper concludes with a policy and financial challenge for governments and education agencies.

2. CONTEXTUAL FRAMING

The challenge of attracting and retaining teachers for rural schools is part of the wider issue of attracting and retaining professionals of all kinds for non-metropolitan postings (Miles, Marshall, Rolfe, & Noonan, 2004). However, there are several factors that drive the need to more deeply understand what might be done to enhance the attraction and retention of staff in rural schools. They include: the size and composition of the national teacher workforce, its age profile, the growing urgency to 'guarantee' replacement of staff for schools due to the retirement rates of Baby Boomers, and the propensity for young professionals to opt for greater mobility and flexibility of employment over stability.

While staffing rural schools has been problematic for over a century in Australia, the last 20 years has seen an intensification of interest in this (Boylan, 2004; Green, & Reid 2004; Herschell, 1998). In 1987, the then Commonwealth Schools Commission (report published in 1988) advised the Minister for Employment, Education and Training of the day that:

> Attracting staff and maintaining reasonable staffing continuity can be difficult in schools in remote areas. Staff in these schools can find that their preparation for teaching in remote schools and the extent of professional support available are insufficient (p. 1).

Submissions to the Schools Commission by education authorities and teachers consistently emphasised that "teachers feel, or are, ill-equipped to face the realities of living and working in rural and remote areas" (p. 141). And, "adjustment to rural teaching can be facilitated through improved pre-service teacher preparation" (p. 142). As well, "there is considerably more that teacher training institutions could do to encourage their students to consider teaching in rural areas, especially those students who show a predisposition towards an appointment to remote schools" (p. 145).

In advocating changes to the way teachers were being prepared for rural and remote schools, the Commission argued that "teachers in rural schools face special challenges and conditions not necessarily experienced by other teachers" (p. 139). It also asserted that "a successful adjustment to a rural appointment…include[s] the preparation for teaching *prior* to appointment" [my emphasis] p. 140).

Fast forwarding to 2000, HREOC, as quoted above, virtually repeated the calls made two decades earlier by the Schools Commission of the urgent need to address problems in the way teachers were being prepared for teaching and living in rural communities.

In addition to national enquiries and reports into education in rural and remote areas, there have been numerous state initiatives aimed at addressing rural education issues such as: the Beyond the Line initiative in New South Wales (Boylan & Wallace, 2001); the development of a framework for rural and remote education in Queensland; the establishment of a Ministerial Rural and Remote Education Advisory Committee in Western Australia; and country practicum scholarships in South Australia. As well, universities have spearheaded research into professional preparation for living and working in rural contexts, such as: the Queensland University of Technology teacher mentor flexible delivery program (Ballantyne & Mylonas, 2001); the Centre for Rural Social Research at Charles Sturt University; the University of New England through a national rural and regional areas science, mathematics and ICT focus; and Flinders University's undergraduate Teaching in Rural and Regional Communities program. As well, following HREOC's inquiry, the Australian Ministerial Council for Employment, Education, Training and Youth Affairs (2001) developed and approved a National Framework for Rural and Remote Education.

Notwithstanding the diversity and depth of enquiries and reports, the research and the initiatives, the issue of attracting and retaining teachers in rural schools continues to be problematic. Given what is occurring in many rural areas through the impacts of drought, climate change and globalisation (Cocklin & Dibden (Eds.) 2005; Alston and Kent, 2006) and demographic shifts, especially in relation to youth (Salt, 2004), challenges associated with attracting and retaining professionals to rural areas will persist and are likely to intensify.

3. THE FINANCIAL COSTS OF A RURAL PLACEMENT

In this section, the main cost drivers of taking a rural pre-service placement are presented together with the dollar value of the various expenses that students have to meet.

There are two primary factors that frame the overall cost of rural pre-service teaching placement. They are the duration and the distance travelled for a placement. The research being used to inform this paper found that the mean length of a rural placement is 26 school days. In calendar time, this equates to more than five weeks in a rural community, assuming an individual does not return home during a placement. Secondly, the mean distance travelled for a rural placement is 436 kilometres.

Essentially there are six known expenses that contribute towards the financial cost of a rural pre-service teaching placement. They are transport, accommodation, personal and professional preparation, meals, loss of income from paid employment, and care provisions where required. In addition there are costs of a relational kind to which dollar figures are harder to assign but which are nevertheless seen as a cost by at least some who take a rural placement. All amounts quoted are averages.

Transport expenses for a rural placement amount to $391, with nearly 80% of travel being by car. Accommodation expenses for most rural pre-service participants are of two kinds: money to retain 'home base' or university accommodation, and money to pay for accommodation while on placement. Accommodation adds $383 to the cost of a rural practicum. Personal and professional preparation expenses—buying some new clothes 'to look like a teacher', organising teaching aids, upgrading communications and the like, contribute $333. Meals add a

further $376 to the cost, and in factoring this into the total, it needs to be noted that food as an item has to be met by pre-service students who remain in metropolitan schools, though there is a 'country loading factor' impact. Paying for care services such as child minding and support for a partner with a disability while on placement adds another $376, but only 5% who participated in the research had to meet this type of cost.

The largest cost of taking a rural placement is generated through loss of income from paid employment—$1,070. Over 55% (121) of survey respondents said they received no income from paid work during their placement. However, 41% (90) said they received some financial support during their placement, which amounted to $522. Assuming some overlap in the two sets of responses, all students who take a placement and have regular paid employment are at least $548 out of pocket. Parents and family (20) were most often cited as providing financial support for taking a rural placement, followed by universities (19), and state departments of education (16).

In summary (see Table 1), it costs an average of $2,553 for a pre-service teacher to undertake a 26 school day rural placement, travelling around 450 kilometres. If the cost of providing care is added, the total becomes $2,920. These amounts translate to weekly costs of $510 and $584, which are 61% and 70% respectively of the Australian seasonally adjusted estimate of "All employees total earnings" for August 2006 (ABS, 2008).

Table 1: Summary of the financial costs of a 26 day rural pre-service placement

Cost Driver	Travel	Accom^{n}	Personal Prep^{n}	Meals	Loss of income	Total cost 'no care'	Total cost 'with care'
Mean	$391	$383	$333	$376	$1,070	$2,553	$2,920

4. THE PERSONAL COSTS OF A RURAL PLACEMENT

While some pre-service teachers choose a rural placement as a preference and 'take on board' the costs and issues as a 'natural consequence' of their decision, for others, the sense of the personal cost is more pronounced. Disruption and disturbance to established routines, especially where family and children are concerned, are significant aspects of the personal costs of taking a rural placement. To illustrate, *"my husband had to take holidays to look after the children, thus did not get shift penalties, just [his] base wage"*.

Foregoing income from paid employment in dollar terms has been quantified in the previous section. There are, however, other costs associated with loss of income from employment that contribute to the full cost of taking a rural pre-service placement. Chief among these is the probability of not continuing in paid employment at the completion of a placement. Twenty-eight respondents said they were unable to return to their job after their country placement. Other comments by survey respondents show that returning to former paid employment can involve penalties and struggles such as:

"I lost a few hours but I have since made it back to my regular hours"

"…my job was replaced by another while I was away…my hours halved"

"…each time I needed to beg for my hours to return…"

As well, for some rural pre-service participants, there is the cost of dealing with changed perceptions of them as employees—*"my manager now believes that I am unreliable, and I am*

waiting for her to roster me again". Another instance of the personal cost of taking a rural placement which, as stated earlier, interrupts established routines and employer expectations, is doing extra non-paid work to 'get things back to normal' just to keep a job—*"I had to spend a lot of unpaid overtime re-organising…because casuals were used to fill my position and they were not familiar with all the minor aspects of the job"*. It is also clear from this comment that some pre-service teachers have jobs entailing considerable knowledge and management expertise, and they appear to assume responsibility for the way things are done during their absence, which is another 'hidden' pressure on them.

5. BENEFITS OF TAKING A RURAL PRE-SERVICE PLACEMENT

There appear to be four types of benefits of a rural pre-service placement. They are: reinforcement of positive views already held about teaching in a rural school; expansion of professional horizons and opportunities; an awakening of interest in community; and possible reassessment of employment options.

In the research, there were 148 responses from individuals that indicated a country placement reinforced or confirmed that teaching in a rural school was what they wanted to do. Examples of comments of this type include:

> *"I know I want to teach in a country school."*
>
> *"Yes, I have decided that country service would be of great benefit to me personally and professionally."*
>
> *"My enjoyment of teaching in this area has allowed me to put my hand up for country service."*
>
> *"Yes, I'm confident to teach in small towns now. The small town chatting and clique-i-ness takes some getting used to. But there is great friendliness too".*

The reinforcing impact of a rural placement does, however, need to be read in terms of the majority of survey respondents indicating they mostly thought of themselves as a country person. By contrast, eight respondents said their country pre-service placement either confirmed that rural was not for them or that they would prefer a metropolitan posting. Thirteen respondents said their country placement had no impact on them because they had always intended to teach in the country and twelve reported their country placement made them realize a rural appointment 'would be ok'. Comments here include:

> *"…it showed me that teaching in the country would not be so bad."*
>
> *"I would consider teaching in the country in the future."*
>
> *"I am now open to the idea of working in a country school".*

In terms of the advantages of taking a country placement, 17 respondents specifically mentioned the benefits of small schools, small class sizes and diversity (probably of teaching experiences given that teachers in small schools frequently have to teach outside their field(s) of professional preparation). Twenty-eight respondents highlighted the environment of country schools being an advantage. One lengthy response captures a range of benefits of taking a rural placement:

[A rural placement] broadens horizons, exposes pre-service teachers to different lifestyles, attitudes, priorities, approaches, prepares us for likelihood of teaching in country school, get to see and understand more about Australia, and Australians, takes us out of comfort zone, develops networks (professional & social), is character building and helps to put the course & future into a different perspective—uncovers some unknowns.

Also in relation to perceived benefits of taking a rural pre-service placement, 37 respondents commented that they had gained a first-hand sense of community and of experiencing life in a rural community. Comments include:

"The experience is unbeatable. The people in the country areas are so nice and kind to you. Plus the resources the school had were amazing and how the community got involved in school events and activities was great."

"It provides you with a different cultural experience…"

"The country is a very inviting place. The country service requires you to become more involved in extra curricula activities with the school and also in the community."

"Seeing how a small community works, how teachers and students have connections outside of the classroom…opportunity to work with Koorie students."

Thirty respondents listed the quality and type of student interactions and the range of teaching experiences as benefits of taking a pre-service country placement. For example, one respondent said, *"you are able to focus completely on the task at hand and you are given more opportunities as a pre-service teacher"* in a rural school while doing a placement. From another, *"kids are nice, people are friendly; in my case it has developed links with the community"*.

An opportunity to compare city and country teaching contexts as an advantage of taking a country placement was identified by 36 respondents. In addition to the opportunity to compare city teaching with teaching in the country, seven respondents cited personal benefits from taking a rural pre-service placement, such as: *"stepping out of your comfort zone is healthy"* and two said that the opportunity to teach Indigenous students was especially valuable.

6. DISADVANTAGES OF TAKING A RURAL PRE-SERVICE PLACEMENT

The commentary on the disadvantages of taking a rural pre-service placement essentially parallel the data in Table 1 and mainly centre on various cost pressures. However, the frequency of the disadvantages derived from the survey responses adds richness to the statistics in the table. Eighty respondents said cost was a major problem; 47 cited travel and distance; 13 identified accommodation.

The comment "*I had to sleep on a swag for 8 weeks*" from one respondent, while it may evoke notions of 'doing it tough for a good cause', underlines having to make do on basics, which in turn is not conducive to a rural placement being a professionally significant, formative event. In addition, 29 respondents cited loneliness and separation from friends and family; 20 listed isolation as a problem they had to cope with; 6 said lack of university supervision; 19 nominated a lack of resources for teaching; 9 said that you are not able to work (i.e. had no regular income); and 11 referred to the limited range of options in schools and fewer students than in the city.

7. CONCLUSION

Undertaking a pre-service rural teaching placement is a costly exercise averaging $2,553 for a 26-day assignment. By far the largest component (up to 42%) of this amount is the income lost from paid employment. In addition, some students, when they attempt to resume their employment, find they no longer have a job or they have to accept reduced conditions. As well, there are personal, non-quantifiable types of costs that have to be dealt with to take a rural placement, like disruptions and disturbances to family relationships and routines. Put another way, in some circumstances, the cost-burden of a pre-service rural teaching placement is carried by partners, children and carers, as well the individual directly involved.

While there are costs and some disadvantages, there are also substantial benefits that accrue to an individual when they undertake a rural placement as part of their teacher education program. Probably the most significant benefit is that an extended period of teaching and living in a rural community provides insights and opportunities that can only be gained by being immersed in 'place' (Gruenewald, 2003).

While this paper has focussed primarily on rural placements from the perspective of individual pre-service teachers, there are substantial benefits to teacher employing authorities when they can recruit for their schools from a pool of graduates who have first-hand experience of rural contexts. Perhaps it is time to have some of the financial cost of rural pre-service teaching placements met by education departments and/or school sectors?

When asked how much financial support would encourage pre-service teachers to take a rural placement, respondents to the national survey said about $1,000. Given that the actual cost of a pre-service rural placement is more than double this amount, the response is really a policy and funding bargain!

For $10 million annually, departments of education—governments—could become partners with 10,000 pre-service teachers in renewing Australia's rural teaching workforce needs each year. If this opportunity were taken up, something very significant about improving the attraction and retention of teachers for rural and remote schools would be ignited.

REFERENCES

Alston, M. & Kent, J. (2006). *The impact of drought on secondary education access in Australia's rural and remote areas.* Wagga Wagga, Australia: Centre for Rural Social Research, Charles Sturt University.

Australian Bureau of Statistics. (2008). *Average Weekly Earnings, Australia, August 2006*. Retrieved August 17, 2008, from http://www.abs.gov.au/austats/subscriber.nsf/0/6EB1862D8B3236ECCA2572270015ED95/$File/63020_Aug%202006.pdf

Ballantyne, R., and Mylonas, A. (2001). Improving student learning during 'remote' school-based teaching experience using flexible delivery of teacher mentor and student preparation programmes. *Asia–Pacific Journal of Teacher Education, 29*(3), 263–273.

Boylan, C., and Wallace, A. (2001). *Attracting pre-service students to rural schools*. Paper presented at the Annual New Zealand Association for Research in Education conference, Christchurch, New Zealand, 4th–8th December.

Boylan, C. (2004). The state of rural education in pre-service teacher education courses. *Working Together, Staying Vital. Proceedings of the Joint Conference: WA District High School Administrators' Association and Society for the Provision of Education in Rural Australia Conference, June, Fremantle, Australia*. Retrieved August 17, 2008, from

http://eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/1b/eb/ce.pdf
Cocklin, C. & Dibden, J. (Eds.) (2005). *Sustainability and Change in Rural Australia*. Australia: University of New South Wales Press.
Commonwealth Schools Commission (1988). *Schooling in Rural Australia*. Canberra: Curriculum Development Centre.
Green, B., and Reid, J-A. (2004). Teacher education for rural and regional sustainability: changing agendas, challenging futures, chasing chimeras? *Asia-Pacific Journal of Teacher Education, 32*(3), 255–273.
Herschell, P. (1998). Perceptions on the preparation, attraction and retention of teachers for rural and remote areas: a community perspective. *Successful Partnerships enabling Rural Achievements: Proceedings of the 14th National Society for the Provision of Education in Rural Australia Conference, Alice Springs, Northern Territory, October 7–10.*
Human Rights and Equal Opportunity Commission. (2000a). *Emerging Themes: National Inquiry into Rural and Remote Education*. Commonwealth of Australia: Stirling Press.
Human Rights and Equal Opportunity Commission. (2000b). *Recommendations: National Inquiry into Rural and Remote Education*. Commonwealth of Australia: Stirling Press.
Miles, R. L., Marshall, C., Rolfe, J., and Noonan, S. (2004). *The Attraction and Retention of Professionals to Regional Areas*. Paper presented at the Regional Research Colloquium. Retrieved February 19, 2008, from http://www.bowenbasin.cqu.edu.au/pdfs/dotars_colloq.pdf
Ministerial Council for Employment, Education, Training and Youth Affairs. (2001). *National Framework for Rural and Remote Education*. Retrieved August 17, 2008, from http://www.curriculum.edu.au/verve/_resources/rural_file.pdf
Rural Education Forum Australia (2005). *Pre-Service Country Teaching in Australia: What's Happening—What Needs to Happen*. Available at http://www.refa.edu.au/asp/index.asp?pgid=42408&cid=15531&id=71696
Salt, B. (2004). *The Big Shift*. Victoria Australia: Hardie Grant Books.

APPENDIX 1

Pre service country teaching costings survey

The pre-service costings survey was designed for students currently enrolled in a teaching qualification program and who had completed a country placement—the rationale for the former point was to meet university research ethics requirements; the rationale for the latter was that they would have actual experience to draw upon for answering the questions.

All universities/teacher education providers were invited to have up to 30 pre-service students, randomly identified by alphabetical order and who satisfied the criteria as above, participate in the on-line survey.

The costings survey comprised 32 questions.

Questions 1—10 focused on respondent background and context information such as university and degree program, age, gender and length of country placement.

Questions 11—27 focused on various cost generators and any support that respondents accessed. These included income lost from paid employment, accommodation, the experience of returning to employment following placement, and any sources and amounts of financial support for a placement.

Question 28 focused on the amount of financial support respondents thought would be required to encourage pre-service teachers to take a country placement.

Questions 29—32 focused on personal impacts, advantages, disadvantages and any other advice about a pre-service country placement.

217 survey responses were received from 19 teacher education provider sites, which represents about a 48% site participation rate. There were some sites that provide teacher education programs where the timing of the survey and/or the current provision of offerings meant that it was not appropriate for them to participate in the survey. In terms of participation in the survey, no attempt was made to verify any of the returns, given the anonymity agreements of the survey.

Further information about the pre-service country teaching costings survey is available at http://www.refa.edu.au/asp/index.asp?pgid=4240&cid=15331&id=73218

EDUCATION, RELEVANCE AND RURAL DEVELOPMENT

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ABSTRACT

Politicians, curriculum planners and policy makers in most developing countries are concerned about the progress of eradicating illiteracy especially amongst their rural populations. It is indeed important to increase access to education and measure progress using the barometers of the numbers of graduates our systems produce annually, but, in most cases these qualifications are only a ticket out of the holders' rural communities, without any meaningful returns to the same. Education for children in rural communities has to be made more relevant to the needs of the rural people, so that schools can help to form productive and informed adults and leaders who are willing to stay in their communities. This does not mean creating a different curriculum for rural schools, but enhancing the existing one to solve both rural poverty and urban problems resulting from the influx of job-seeking school leavers.

Keywords: ***education, relevance, poverty***

1. INTRODUCTION

Is achieving Universal Primary Education (Millennium Development Goal 2) the ultimate solution to problems faced by the world's poor? How can education be harnessed to meet the needs of the rural populations? Where does this primary education lead? The aim of this paper is to discuss the special role education can play in rural poverty alleviation as well as helping to solve problems resulting from rural-urban migration. The key is that this education needs to be viewed by the beneficiaries as relevant to their needs. Research has shown that the rural people are not only aware of their needs, but they also know what improvements in education could help meet those needs. (Keane, 2006a; Keane & Malcolm, 2003; Lieten, de Groot, van Wieren, de Lange & Roschanski, 2007; Nelson Mandela Foundation, 2005), so their opinions could be taken on board.

2. THE PURPOSE OF EDUCATION

Education, whether institutionalized or informal, usually inculcates facts as knowledge, and its purpose is to provide a qualified workforce. Although the UNESCO report on education (Delors, 1996), advocates a broader conceptualizing of education, to include learning to know, learning to do, learning to be, and learning to live together, this has not been achieved in practice in rural South Africa. (See for example, Keane, 2006a; Nelson Mandela Foundation, 2005) Viewed thus, education does not fully benefit rural societies especially in developing countries. Education should be, rather, a means of nurturing the human being into their adult roles, in which case the teacher is more than a source of knowledge, but a mentor, from whom the children can learn socially acceptable values and attitudes (Baig, 2008). Education should:

> …ensure that children's human capital is developed to its fullest potential, benefiting the children themselves, their families and communities and society as a whole by the increased contribution they can, when grown, make to economic growth and social development. (IPEC, 2003 in Lieten et al, 2007: 5).

Education is both a means of, and a part of, development. The United Nations Organization declared years 2005 to 2014 as the Decade of Education for Sustainable Development. The UN acknowledges education as one of the major instruments with which societal advancement can be brought about in a sustainable way. Education for sustainable development in the rural context should therefore go further than just eradicating illiteracy. Ability to read and write should be a stepping stone to achieving rural development.

Education is a part of social policy (Gwarinda, 2007) and thus an entitlement of the people. History has shown how colonial powers in many developing countries used school curricula as a tool to keep indigenous peoples in subordinate roles, (Odora Hoppers, (2001). The same occurred in South Africa during apartheid. Post-colonial governments' calls for democracy and social justice could revise the same strategies that repressed rural areas through education. Research, however, reveals this has largely not happened (Gwarinda, 2007; Nelson Mandela Foundation, 2005). Jonathan Jansen (in Gwarinda, 2007) explains this failure in terms of "political symbolism", that is, the process of making policies without implementing them. This seems to explain the general lack of change in rural communities in developing countries.

3. THE RURAL CONTEXT

The rural areas of developing countries are generally characterized by slow infrastructural and economic development. This leads to mass movement to urban areas. Despite a global trend of poverty shifting towards urban areas, the incidence of poverty is still higher in rural areas (Ahmed, Hill, Smith, Wiesmann & Frankenberger, 2007; Acker & Gasperini, 2003). Rural should, however, not be seen as deficit (Keane, 2006c). This scenario makes it necessary to consider adding a dimension to education in rural schools that would be specifically relevant to their context, and address the needs of people who live in these areas. It could also, reduce distinctions between rural and urban (Delors, 1996), and in the long run, help alleviate rural-urban migration and the problems associated with it. Unless there is deliberate policy and practice to empower rural people through education, developing countries will continue to privilege dominant interest groups and not address social needs and the problems of social justice and democracy (de Clerq in Zafar, 2007). It should also be realized that not drawing on the talents and potential of rural communities means a great loss of a valuable resource for the whole country.

4. HOW SHOULD WE DEFINE DEVELOPMENT?

In the past, development was viewed in association with economic growth, with great emphasis on per capita income and Gross National Product (Aluede, Aluede & Ali, 2003). Bringing about development therefore meant increasing the rate of investment which directly led to economic growth. The UNESCO International Commission on Education for the Twenty-First Century advises that all-out economic growth is not the ideal for achieving equity (Delors, 1996). We strongly agree with Goulet (in Aluede, Aluede & Ali, 2003), when he views development not just as a cluster of benefits given to people, but as a process by which people acquire greater mastery over their destiny. Development should come from a people's ability to define their problems and needs and be able to find practical solutions without necessarily having to get prescriptions from external sources. To some extent South Africans have indeed achieved

greater mastery over their destiny through the change of government in 1994. However, the real change in well-being is yet to reach into rural areas, and educational opportunities for rural children remain dismal (Gwarinda, 2007; Nelson Mandela Foundation, 2005). In this sense development, and even the meaning of it for most South Africans remains elusive.

5. RELEVANT EDUCATION

The understanding of the concept of relevant education is dependent on contextualization. Lucien (2007) refers to the Prime Minister of Trinidad's conception of relevant education as one that satisfies the needs of the job market. This definition may be appropriate for that country's context, but in a country like Zimbabwe, where unemployment is above 80%, continuing to produce job seeking graduates actually worsens the situation. Defining relevant education in terms of employability would, for Zimbabwe, be disempowering the recipients as well as society. Consequently, when thinking of relevance in education, we need to ask to whom it is relevant and for what purpose (Keane, 2006a; Keane & Malcolm, 2003). Relevant education is a complex concept. It cannot, as pointed out by Lucien (2007), be entirely reduced to economic terms. It should be one that addresses issues confronting the citizens whom it is serving. Recipients and beneficiaries of an education system must therefore be given a chance to define it in their own terms. This is the only way to develop good policy and practice (Lieten et al, 2007).

Relevant education is people-oriented education. We agree with Kassam's position (in Aluede, Aluede & Ali, 2003) on the relationship between education (which he takes to mean literacy) and development, that education is a means of combating poverty. We, however, also believe that education should go much further than enabling people to read and write. Such education is life-long, diverse, and available to all. That way it becomes the heart of both personal and community development (Delors, 1996). It is this kind of education that can alleviate poverty.

Education is the crux of the progress of any society (Lucien, 2007). However, it must be understood in a wider context than only academic achievement. While the global view is of education as a right (and that Universal Primary Education has to be achieved by 2015) and as having an intrinsic value, many rural people still view it as an economic investment, because they have a problem that they face and hope to solve through education – and that is poverty. Currently, education for most rural children has only a small, if any, relationship with students' lives outside the classroom (Taylor & Mulhall, 1999). More than three decades ago, Lindsey (1975) observed that school curricula were producing rural children who could not function within their societies because they lacked the requisite skills. This is still true today. The challenge for rural education is not only that of achieving literacy, but also guaranteeing employment and self-employment of the 'economically active' population (Bouyer, Debouvry & Maragnani, 2005). Rural people make their own informal evaluations of local education, where they check school leavers' capacity to contribute towards community improvement. Formal education in many developing nations does not equip students with skills that could be useful in developing their communities. Life experience in Zimbabwe's southern and western border districts, for example, has shown that both parents and students see no value in education as those who abandon school and migrate to Botswana and South Africa give better returns to their families than those who remain in school. Any form of education that does not address the issue of rural poverty is therefore likely to be silently rejected as irrelevant.

In her research on science education in rural South Africa, Keane (2006a) asked the locals their understanding of relevant science. Their response was, "We are hungry". Both the students and adult participants in this study expressed preference for practical skills that could directly

benefit their community. Relevant education was seen in the light of preparing students for the real world ('real' here refers to their home area). Relevant education is not one that will take the students permanently out of their community, but one that helps them value it. This type of education, as Keane found out, does not mean students should not have the opportunity to go to university, but it does make it possible for recipients to make the deliberate choice to work and stay in the rural areas.

The qualitative study by Lieten et al, (2007), which was carried out in remote villages of seven African and Asian countries reveals that as long as rural schools do not live up to the communities' expectations, education as such will not be given much credit. In Pakistan the respondents complained that curricula did not meet the needs of the communities as little attention was given to practical skills. The participants in Kenya thought that children were wasting time at school, as they were not learning any useful skills. Parents complained that all subjects were academic so children came out of school ill-equipped, which could lead to frustration in future and lead them to being susceptible to bad habits and influence. The education was alleged not to encourage self-reliance and entrepreneurship, and therefore not useful for improving life in the villages. When addressing issues of the relevance of education in poverty–stricken rural areas, policy makers therefore have to answer to the satisfaction of the populace, as to why children have to go school and not stay at home.

Irrelevant education can lead to lack of insight into possible avenues of rural development. Toms (2005) reveals how learning about the life cycle of the *Mashonzha* (Tshivenda for the mopane worm, *Imbrasia belina*, which is a delicacy in most Southern African countries, could lead to industrial processing in the areas where they occur. Teachers however prefer to use the farfetched example of the Chinese silk worm to teach this concept, leading to students viewing the topic as both difficult and irrelevant to them.

Relevant education provides knowledge-for-action. It should equip people with the range of competencies which include cognitive and non-cognitive skills, knowledge and attitudes (Pritchett, 2004 in Lieten et al, 2007). When children are equipped with the right skills, knowledge and attitudes, they gain access to and recognition in the wider society and cannot be marginalized. We describe the skills, knowledge and attitudes as "right" because urban–oriented formal education that most developing countries inherited and adopted has an in-built, usually uncontested or unexamined bias against skills, knowledge and life in the traditional rural areas. This has resulted in the current magnitude of urbanization and its associated problems for both the source region and the destination. The barrier to progress is, partly, that decision makers do not ask for or listen to the voice of the poor.

Investment in education is investment in social capital (Miller, 1995) and in human capital (Nyamnjoh, 2004; Tager, 2003). The human capital, which comes in the form of knowledge and skills, if properly capacitated, can play an important role in addressing issues of rural poverty (Tager, 2003). Investment in education entails more than just addressing issues of access (e.g. building more schools, providing classrooms and books, and recruiting more teachers), and monitoring enrolment figures, but should aim at uplifting rural areas through developing those resources imbedded in the social structure itself, e.g. norms, social networks and interpersonal relationships that contribute to a child's growth (Miller, 1995). Unless the complexities and contextual realities of developing countries are adequately addressed, statistics on enrolment alone cannot be valid evidence for the evaluation of Millennium Development Goals (Zafar, 2007).

6. COMMUNITY INVOLVEMENT

Education does not exist in a vacuum, and continuous reflection is imperative on the part of practitioners at all levels to ensure their actions are not divorced from the schools' and learners' spatial contexts. Institutionalized education in the rural context needs to pull down its "fences" to allow for greater input from the community for better output into the same. There should be more community involvement in school affairs, much more than just providing financial support. The community could even be involved in classroom work when they come in as resource persons in their various fields of expertise. The problem is that current forms of institutionalized education give little recognition to community input into the school system. Usually communities are keen to have more contact with schools, if given the chance, and this helps students realize that learning does not only occur in the classroom (Keane, 2006c) The elderly in most traditional communities are managers of useful traditional knowledge which children need to be helped to appreciate. Andeas Fuglesang, a Swedish Communication and development expert describes the function of elders in traditional communities as "information storage and processing units" just like the hard drive of a computer (Aubel, 2006). He also makes reference to Ham pâté Ba, a Malian philosopher who says, "in Africa, when an old person dies it is like when a library burns down". Educators in rural areas need to use those 'free' libraries to improve students' attitudes towards their own experiences, knowledge and skills.

Miller (1995) advocates the use of the community as curriculum. This emphasizes the study of the community in all its various dimensions. This helps students to value the community. Involving rural students with opportunities to become active members of a community helps them to see their home areas as a positive choice among many places to live and work.

7. RECOMMENDATIONS

Experience in both living and teaching in rural areas has shown special characteristics, which could be used as a basis for an enhanced curriculum for rural schools. Such a curriculum could take cognizance of what the community mainly depends on for a living. An agrarian community, for instance, would definitely appreciate it if their children leave school with practical and technical skills that could help on the farms. The same applies to a fishing community etc. This is likely to empower school leavers to contribute towards their subsistence economy. Some rural communities also have craft industrial skills e.g. wood or stone carving, and pottery. In many rural areas these skills are developed through informal means and use simple tools, but the craftsmen and women have products which can go global and enjoy the most affluent markets. Incorporating such skills into the curriculum could ensure appreciation of the same and a deliberate choice by some school leavers to pursue the trade instead of migrating to towns to seek employment. Education for rural empowerment also needs to consider resources available locally, and enhance people's understanding of their worth, e.g. the mopane worm found in Zimbabwe, Botswana and South Africa. School education can enlighten communities on possible commercial harvesting of these (Toms, 2005; van den Berg, 2008). Tager (2003) notes that it is not always lack of resources that causes poverty, but rather a lack of information regarding the possible utilization of the resources. Field studies and educational tours need to be concentric in nature (starting from the local area and going further afield); so that students appreciate that their community is not totally barren.

We advocate an education for rural peoples that, (as Delors, 1996 puts it), helps them become global citizens without losing their roots, and that allows them to continue to play an active part in the life of their nation and their community. Curriculum planning could take the above into

consideration and design a kind of Life Orientation programme that affirms and is useful to rural communities. The need to consult stakeholders in rural areas can never be overemphasized (Keane, 2006b; Keane, Malcolm and Rollnick, 2004; Nelson Mandela Foundation, 2005). Unfortunately the top-down nature of most curriculum planning in the developing world sidelines any possible input from recipients of those curricula, with the result that rural communities are alienated from their own schools.

8. CONCLUSION

Our view of relevant education does not mean a separate curriculum for rural schools. It is a way of enhancing the existing school curriculum to address the issue of rural poverty, and build on the cultural capital of local communities. It is not meant to confine the recipients to rural areas or to limit knowledge opportunities, but is rather, a way of tackling both rural poverty and urban unemployment, as well as developing rural expertise so that it can contribute to the national well-being. Educational planning (which is mainly done by urban-based personnel), for rural education should be dialogical, involving exchange of insights, experiences and information (Odora Hoppers, 2007) with the recipients. Uplifting rural areas should therefore begin in the classroom, and accepting the input of the rural stakeholders as well.

REFERENCES

Acker, D. and Gasperini, L. (2003), Launching a new flagship on education for rural people: an initiative agricultural and extension educators can get behind. *Journal of International Agricultural and Extension Education, Volume 10 (3), p81-85.*

Ahmed, A.U; Hill, R.V; Smith, L.C; Wiesmann, D.M. and Frankenberger, T. (2007). The world's most deprived: Characteristics and causes of extreme poverty and hunger. Retrieved on August 7, 2008 from http://www.ifpri.org/2020/dpvp43.asp

Aluede, O; Aluede, O.A. and Alli, A. (2003). Education and development in Nigeria: What is to be done? *Research for Educational Reform*, Volume 8(3) p16-24.

Aubel, J. (2006). Grandmothers promote maternal and child health: The role of Indigenous Knowledge Systems' Managers. *IK Notes* No. 89, February 2006, World Bank

Baig, K. (2008). The real purpose of education. Retrieved on 15/07/08 from http://www.albalagh.net/education/education2.shtml

Bouyer, B.; Debouvry, P; and Maragnani, A. (2005), Skills for rural people: a renewed challenge. *Debates in Skills Development ,* Paper 10, Working Group for International Cooperation in Skills Development, Rome.

Delors, J. (Chairman) (1996), *Learning: The Treasure Within: Report to UNESCO on the International Commission on Education for the Twenty-first century*. Retrieved August 15th 2008 from http://www.unesco.org

Gwarinda, T.C. (2007). Global constraints to the right to basic education in rural communities: A study of Eastern Cape Province in South Africa. In edited by Odora Hoppers, C. Gustavsson, B. Motala E. and Pampallis, J. (Eds) *Democracy and Human Rights in Education and Society: Explorations from South Africa and Sweden,* Orebro University.

Keane, M. (2006a), *Understanding Science Curriculum and Research in Rural Kwa-Zulu Natal.* Unpublished PhD Thesis, University of the Witwatersrand, Johannesburg

Keane, M. (2006b) How science education may contribute to the lives of a rural community in South Africa, *Wits Education Policy Unit, Quarterly Review*, Vol 13, No 1, pp27-31.

Keane, M. (2006c), Science education and worldview: are cabbages *brassica oleracea* or are they beautiful? In Proceedings of 12th IOSTE Symposium, 31 July- 5 August 2006, Park Royal Hotel, Penang, Malaysia.

Keane, M. and Malcolm, C. (2003), Relevant science: but relevant to what? Science Teachers Association of Victoria, Australia, *Labtalk*, Vol 47, No 2, April, pp 36-38.

Keane, M. and Malcolm, C. and Rollnick, M. (2004), What is science education doing for rural South Africans, and what would they like it to do? In Buffer, A. and Laugksch, R. (eds), *Proceedings of the 12th Annual SAARMSTE Conference*, University of Cape Town, Cape Town, pp 453-458.

Lieten, K.; de Groot, A.; van Wieren, R.; de Lange, A. and Roschanski, H. (2007). Education in rural areas: Obstacles and relevance. IREWOC, Amsterdam

Lindsey, J. K. (1975), Rural education and underdevelopment: aspects of the politics of education. Paper presented at the UNESCO IIEP Seminar, October 1975.

Lucien, N. (2007), A relevant education system. Retrieved on 21/07/08 from http://www.trinicenter.com/articles/2007/020507.html

Miller, B. (1995). The role of rural schools in community development: Policy issues and implications. Retrieved on 16/07/08 from http://www.nwrel.org/ruraled/role.html

Nelson Mandela Foundation (2005), *Emerging Voices: A Report on Education in South African Rural Communities*. HSRC, Houghton, South Africa

Nyamnjoh, F.B. (2004), A relevant education for African development - Some epistemological considerations. *Africa Development*, Volume XXIX (I) p161-184.

Odora Hoppers, C. A. (2007), Towards a system of dialogue: Exploring issues in educational reform in Sweden and South Africa. In Odora Hoppers, C. Lundgren, U.P. Pampallis, J. Motala, E. and Nihlfors, E. (Eds) *Dilemmas of Implementing Educational Reforms: Explorations from South Africa and Sweden*, STEP.

Odora Hoppers, C. A. (2001), Structural Violence as a Constraint to an African Policy Formation in the 1990s: Repositioning Education in International Relations. Institute of International Education. Stockholm University.

Tager, N. (2003), Bridging the gap: Rural education needs to address sustainability of the community. *Education Africa Forum* p90-95.

Taylor, P. and Mulhall, A. (1999), Learning in the field: can agriculture help in rural primary education? *Id21 Global issues*, Retrieved 10/16/2008 from http://www.id21.org/society/4ajd4.html

Toms, R.B. (2005), Indigenous knowledge icons, education and sustainable natural resource management. *Indilinga: African Journal of Indigenous Knowledge Systems*, Volume 4(1) p 264-269

Van den Berg, S. (2008), Baobab recast as European superfruit. In *Mail and Guardian Online* August 10, 2008

Zafar, S. (2007), A critique of Millennium Development Goals 2and 3: Framing basic education in South Africa. In Odora Hoppers, C. Gustavsson, B. Motala, E. and Pampallis, J. (eds) *Democracy and Human Rights in Education and Society: Explorations from South Africa and Sweden,* Orebro University.

THE REENCHANTMENT OF SCIENCE EDUCATION: TOWARDS A NEW VISION OF ENGAGING RURAL GIFTED CHILDREN IN SCIENCE

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ABSTRACT

For Albert Einstein the experience of scientific discovery involves a sense of mystery and awe at the seemingly endless wonders of nature. We believe that science education no longer captures the mystery and awe of nature in what is taught because the epistemology of how we seek to know the world is itself in large part the source of our disconnection from the world. We have lost the experience of the mysterious in our scientific dealings with nature because we have lost our connection with nature. This is why the making of good teachers into better teachers of science is not enough. In the end, better teachers are simply better at promulgating the current epistemological presumptions of science which themselves covertly encourage detachment from nature on the one hand and its sterile reconstruction on the other. When science education loses its connection with nature, it also loses its capacity to engage students, especially those in rural contexts where distance can prohibit resources and provisions. At the affective level, gifted students in particular, need more than the intellectual challenge science might offer them. They need to be inspired by their emotional involvement within the educational process, which links with and translates into a purposeful and meaningful personal life. In the present paper, we endeavour to show that contemporary science cannot foster the mysteriousness of seeing the world scientifically without first reconceptualizing the epistemology of detachment which underpins it. The reenchantment of science and the awe of its teaching depend upon an epistemology which is itself enchanted. 'Reenchantment' pedagogy has the potential to re-engage gifted children by stimulating in them a sense of awe, mystery, purpose, and engagement that connects their perspectives, thinking, living and learning of science both empathetically and emotionally to the mystery and awe that teaching scientifically should engender.

Keywords: ***engaging gifted students, new educational epistemology, philosophy, reenchantment pedagogy, science education***

1. INTRODUCTION

> "The most beautiful experience we can have is the mysterious. It is the fundamental emotion that starts as the cradle of true art and true science." (Einstein, 1931: 194).

There is an international concern regarding students' disengagement from school science, and lack of interest and declining enrolments in science courses generally (Lyons, 2005; Lyons, 2006; Tytler, Symington, Kirkwood & Malcolm, 2008). "The extent of the declines has prompted a range of international science and education bodies to acknowledge a growing disenchantment with science among young people" (Lyons, 2006, p. 592; Drury & Allen, 2002; International Bureau for Education, 2001). For Albert Einstein true science, and the experience of scientific discovery which flows from it, involves a sense of mystery and awe at the seemingly endless wonders of nature. In the present paper we endeavour to show that contemporary science education has lost or perhaps never had a focus upon teaching science in

a way that fosters the mysteriousness of seeing the world scientifically. The issue here, we suggest, is not merely a matter of 'producing' better 'science teachers' to teach effectively so that students learn more scientific facts, as valuable and noble a task as such a goal may be. The concern resides at a deeper level of educational epistemology. Our aim is to establish that science education no longer captures the mystery and awe of nature in what is taught because the epistemology by way of which science seeks to know the world is itself in large part the source of our disconnection from the world we come to know. We have lost the experience of the mysterious in our scientific dealings with nature because the theory of knowledge undergirding the methodology of science both objectifies and affectively disconnects students from nature. This is why the educational goal of making good teachers into better teachers of science, while obviously important, is not enough and may quite paradoxically exacerbate the problem. On the argument we advance here, better teachers are better at promulgating the current epistemological presumptions of science which themselves covertly encourage detachment from nature on the one hand and its sterile reconstruction on the other.

When science education loses its affective connection with nature, the learning of science becomes in one sense an idle ritual that loses its capacity both to recruit new students and to engage the ones it has. Rural students are disenfranchised through the prohibitions of resource management and program provisions that may be promulgated by distance. Gifted students in particular are lost, because they need more than the intellectual challenge science might offer them. They need to be emotionally involved in learning that gives creative meaning and purpose not only to the educational process but to them personally. This being so, we shall argue that:

1. the dominant paradigm of science rests upon a reductio-mechanistic epistemology that is fundamentally alienating and covertly encourages disconnection from nature;
2. one reason for this disconnection is that the reductio-mechanistic epistemology of science is not value-free;
3. a central value it fosters involves deconstructing 'wholes' into 'parts' which leads to our fracture from the world and the disenchantment of nature;
4. 'reenchantment pedagogy' offers a new vision and direction for science education that becomes possible by reconceptualizing the current epistemological foundation of science in ways which reconnect students with the world of nature by cultivating values which confirm them as part of a living world full of mystery and purpose;
5. enchantment pedagogy takes place within an epistemological framework in which the reenchantment of nature is sufficient to engage gifted children in emotional, empathetic, and ethical involvement in scientific discovery and understanding.

2. REDUCTIO-MECHANISTIC EPISTEMOLOGY OF SCIENCE

It is well established that the dominant paradigm of science rests upon a reductio-mechanistic epistemology (Laura & Cotton, 1999), or upon what others refer to as a negative stereotypical view of science itself (Littledyke, 2008). Be it a negative view or a mechanistic perspective, both viewpoints point to a pedagogy that encourages detachment and the loss of affective resonance with nature. The dominant paradigm of reductio-mechanistic epistemology compartmentalizes knowledge and objectifies the subject matter of science in such a way that the things under investigation are methodologically deconstructed on the assumption that this is how they can best be known. This process of analysis in turn detaches the investigator from the living world by reducing things which are vital and whole into chemical parts which are inert (Laura & Cotton, 1999). Science education thus becomes fundamentally alienating.

'Objectification' is applauded by many as a central principle of contemporary science (Littledyke, 1996). What this methodological principle misses however is that objectification presupposes emotional detachment and the diminution of the moral sensibilities required to protect nature from mankind's attempts to dominate and exploit it. "This has been an all too prominent feature of the way in which science has been applied to the natural environment" (Littledyke, 1996, p.6).

Given that power-based knowledge defines much of our current educational thinking and pedagogy, there is an increasing focus on the importance of quantitative aspects of educational research and the consequent circumstances of educational knowledge in terms of statistical analysis. Even qualitative research thus becomes statistically rendered and covertly, qualitatively deliminated. "The more quantitative we can make the objects of our investigation, the easier it is to predict the outcome of our interaction with them and their interactions with each other. With every increase in predictability we enhance our hold on probability and this augments our capacity for knowing. We thus perceive nature as a machine and create a methodology of reductionism to assist in the disassembly of nature into the machine-like parts of which it is composed" (Laura & Cotton, 1999, p.102). The resulting pedagogy is quantitatively directed and knowledge becomes fragmented, detrimentally disjointed and lacks relevance. We try to quantify and simplify "our detachment from the objects of investigation on the pretence of greater objectivity without recognizing that our method of interaction with nature is itself fundamentally alienating. We thus become progressively separated and distanced from the very world which our methodology was intended to help us understand" (Laura & Cotton, 1999, p.103). The dominant educational epistemology and pedagogy, underpinned by the reducio-mechanistic methodology of scientific investigation, becomes highly mechanized, thereby covertly encouraging disconnection and detachment of many kinds. In addition to our alienation from nature, we depersonalize our relationships with each other through increasingly mechanized forms of exchange which are themselves defined by a reductionist loss of intimacy. For example, the over-emphasis on computechnology, which is a sociocultural phenomenon that threatens the capacity of teachers and students to form bonds of loyalty, trust and confidence, based upon face-to-face personalized interchange (Laura, Marchant & Smith, 2008).

And when the processes of nature are regarded as nothing more than the mechanizations of causal-connectivity, our interventions into and reconstructions of the earth's resources are no longer guided by moral judgment. We see ourselves as being outside nature, divinely placed to dominate the planet and the world around us, as if the created world was nothing more than a cornucopia of resources for our use.

Our emotional alienation from the earth and our detachment from each other changes even the context of the educational system. Schools are viewed as bureaucratic institutions with a curriculum so crowded and teachers so accountable and time poor (Lyons, 2006) that teachers are forced to focus on skills development and, in so doing, fragment teaching and compartmentalize learning so that quantitative results override qualitative and relational aspects of pedagogy (Smith, 2006). Teaching becomes engineered rather than spontaneous, and knowledge is transmitted robotically rather than constructed creatively and qualitatively. Lyons (2006) attributes transmissive pedagogy of experts to passive recipients, personal irrelevance of the decontextualised content, and unnecessary difficulty of school science as the three main issues related to disengaging students. The overwhelming use of a teacher-centred, highly structured science content transmission mode of pedagogy leaves "students with the impression that science is a body of knowledge to be memorized" (Lyons, 2006, p. 595). Transmissive

pedagogy does not assist students' understanding, it serves rather to frustrate students and disengage them from discussion within the learning process (Lyons, 2006).

We have become more accepting of the priority given to the quantitative approach which now permeates the curriculum of our schools rather than finding a balance by utilising qualitative approaches as well (Laura, Marchant & Smith, 2008). Advocates for mechanised education use little qualitative aspects of teaching practice. However, studies exist which underscore the high esteem in which teachers hold their emotional ties with students, ties which help to foster meaningful learning (Cuban, 2001). These studies are fortified by research which has found that teachers view the academic and emotional growth of their students in terms which are more holistic than the narrow and fragmented terms afforded to them via the mechanical modalities of teaching. Moreover, some researchers have concluded that many teachers view what they do as more closely resembling an art form rather than a scientific practice (Cuban, 2001). While western culture continues with its obsession for speed, accuracy and efficiency, there are those who hold that these factors should be construed in a role of secondary importance to classroom learning (Healy, 1998). Valuing the qualitative aspects of teaching helps to slow the conversion of teaching into a purely mechanical and quantitative practice (Cuban, 2001; Healy 1998; Laura & Cotton 1998; Laura, Marchant & Smith, 2008).

The transmissive facts-based pedagogy is devoid of the subtler qualitative aspects of teaching, such as social and emotional interactions, that give greater meaning to learning outcomes (Lyons, 2006). This leads in turn to the implementation of an emotionless pedagogy which is institutionalized as a defining characteristic of the science curriculum. Although science is designed to enhance critical imagination, its institutionalization has produced the contrary result. A reductio-mechanistic epistemology produces contexts in which the workings of the mind become machine-like in their ratiocinations, while non-conformist and more imaginative thought processes are inhibited (Laura & Cotton, 1999). Strictured by mechanistic presumptions, the thought processes of children are inevitably reduced to basic collections of cognitive skills, and fixed conceptions. Rather than developing dynamically thinking human beings, possessed of feelings and emotions, who are enriched through experiencing learning processes via participatory interaction within living dynamic environments (Laura, Marchant & Smith, 2008; Kelly, 2004), reductio-mechanistic education encourages the loss of affective resonance, along with intellectual imagination and emotional engagement. The power pedagogy of reductio-mechanistic education stifles the very elements of emotional involvement, passion, purpose and intuition so critical to creativity. Having generalized the reductio-mechanistic view of "science as an all-embracing world view, its hold over the mind is comprehensive and the values it fosters destructive" (Laura & Cotton, 1999, p.100).

3. DISENCHANTMENT OF NATURE AND SCIENCE TEACHING

With so many education authorities around the world now recognizing that short term "band-aid" approaches have done little to address the growing disenchantment of students with traditional school science, these authorities may now be more willing than in the past to embrace approaches and curricula that engage and nurture the interests of today's young people (Lyons, 2006, p. 608).

The authors consider that the reductio-mechanistic epistemology of science is not value-free, and we have been arguing here that the values it fosters have led ineluctably to the disenchantment of nature, along with our fracture from it. Moreover, there has been a failure to recognize the extent to which the dominant paradigm of knowledge is value-laden. As a culture, we have selected a form of knowledge informed by the value which we place on power and

control, even though there are myriad possible forms of knowledge from which we could philosophically draw. As a consequence, the form of knowledge in science education is conceptually conditioned by our preoccupation to dominate all living and non-living things in the world. This being so, then the underlying rationale which motivates preferring one form of knowledge over another is the value we have placed on power and control. The western world, knowingly or unknowingly, uses the dominant paradigm of power-based knowledge as an explicit mandate to transform or restructure the world in any way it sees fit. As Littledyke (2008, p. 4) says, "modern science has also been incriminated for contributing to environmentally damaging approaches to technology through 'mechanomorphism', in which ecological systems are inappropriately treated as machines with resulting environmental damage". Laura and Cotton (1999, p. 102) espouse that, "the pedagogic reliance upon and priority given to the teaching of power-based knowledge is epistemologically gratuitous to the mandatory study of the form of science which enshrines knowledge as power should be recognized as the state-sanctioned, albeit unwitting, promulgation of an ideology of environmental destruction and degradation".

Undergirded by a power-based educational epistemology, such disregard for the natural world provides the social framework within which many traditional values, such as the importance of family, community, and relationships, both within and without educational contexts are systematically marginalized and compromised (Laura, Marchant & Smith, 2008). Disconnected from nature and each other, the importance of connecting intimately with others is devalued, while the reliance upon supportive educational contexts with a focus on building relationships and intrapersonal development are discouraged.

The power-driven form of knowledge behind teaching and learning science that our culture has chosen to embrace does little to foster the moral sensibilities which encourage consideration for others or nature. Similarly, the epistemology of power pedagogy fails to engender awe, wonder and mystery in searching for scientific truth, knowledge or understanding. If power-based knowledge underlying teaching serves to isolate human interchange and disconnect us from natural processes, it is bound also to alienate us from each other. From this it follows that until we move from an epistemology of power to an epistemology of connectivity, the reenchantment of nature and the awe associated with it cannot be encompassed within the teaching of science. The commitment to teaching which is power driven will do little to foster the values of empathy and respect, upon which our capacity to view the world and each other with awe and engage in the mystery of science determinately depend. Contemporary science education then has lost touch with the enchanted world of nature and thus with the sense of 'mysteriousness' so integral to creative wonder.

While today's teacher educators are enriching their undergraduate and postgraduate teaching courses with a larger focus on constructivist pedagogy (Liang & Gabel, 2005) that may undoubtedly result in 'better' science teachers, the concern we have resides at a deeper level of educational epistemology. In so far as the epistemology underlying our view of the world remains entrenched in a view of knowledge as power, we shall continue to seek power over each other and power over nature. Rather than promulgate the mystery and respect that nature warrants, we are encouraged to transform the living earth into increasingly inert, synthesized, artificial and deadened chemicalised environments of predictable control. Having disconnected from nature epistemologically, better teachers simply become better at promulgating the current epistemological presumptions of science which themselves implicitly encourage detachment from nature on the one hand and its sterile reconstruction on the other (Laura, Marchant & Smith, 2008). This is why the educational objective of making good teachers into better teachers

of science is not enough. There is the need to go further. Some teacher educators, for example, are endeavouring to do so by focussing on the link between affective and cognitive processes in teaching education for sustainability (Alsop & Watts, 2000). Littledyke (2008, p.1) suggests that "the cognitive and affective domains need to be explicitly integrated in a science education that informs environmental education, as a sense of relationship is essential for environmental care and responsibility leading to informed action". However valuable this new direction may be, we are arguing that what is needed is a radical change of epistemic perspective, a change, that is to say, in philosophical thinking which reconceptualises the dominant epistemology of power into ways of knowing through empathy and connectedness. Viewing nature empathetically and focusing on an epistemology of connectivity provides a new foundation on which to build a way of seeing the world that unites us with it in moral partnership. Given that the teaching of science, especially environmental education, should be concerned with the promotion of values associated with our empathy for fellow human beings and the environment, then our psychological and empathetic commitment to a form of participatory consciousness which views knowledge in terms of connectivity with the environment can only bring us closer to nature.

The classroom environment can itself be regarded as an ecology consisting of many qualitatively and emotionally interrelational entities (Smith, 2008). It is the emotional connection with cognitive processes that motivates and engages students in meaningful and authentic learning of deep quality. The importance of feelings, senses and emotions within educative contexts is supported in the research literature (Cuban 2001; Laura & Cotton, 1999; Littledyke, 2008). There is the need to emancipate children's minds so that their creative, reflective and imaginative capability is allowed to fly free of the conceptual limitations of reductio-mechanistic epistemological constraints. Tomlinson (1998) asks, "will it make the child a better person for having studied it — more aware of the possibilities and responsibilities of life?" We have been arguing that this can more effectively happen when children are nurtured within intellectually challenging interpersonal and intrapersonal educational contexts.

Teaching and learning relationships are fundamentally diminished when the dynamicity of intellectual pursuits are not supported by emotive and personal elements of education. We submit that the dynamic and multifaceted nature of interpersonal relationships between student and teacher and the environment need to be nurtured. Opportunities need to be provided so students are able to develop empathetic connections with others around them and their environment. A teacher with an empathetic view of nature who engenders knowledge based on connectivity rather than power is better able to facilitate and mediate scientific enquiry in ways that nourish awe and mystery, thereby engaging students with a profound sense of purpose and passion in seeing the world scientifically.

What has become evident from the foregoing reflections is the extent to which the disenchantment of education is a significant concern. There exists a definite need for further policy debate on the ever-increasing role we have let reducio-mechanistic teaching and learning play in inhibiting the emotional, the joyful, and the mysterious as qualitatively salient components of the educative processes. Essential to love of learning are dynamic interpersonal modes of teaching that nurture the qualitative elements of human emotion, cultivate moral sensibilities and foster facets of classroom learning which form the basis of empathetic relationships. In turn, human relationships are treasured, mystery is nurtured and meaningful connections are made amongst each other, with nature and between our educational and personal lives.

4. A NEW VISION FOR SCIENCE EDUCATION: REENCHANTMENT PEDAGOGY

Postmodern science, which offers a humanising 'reenchantment' of science, provides a meaningful and purposeful approach to understanding the universe in which aesthetic and spiritual relationship is central. This is also a way of making science more generally attractive and acceptable as a curriculum subject as well as contributing to values which are necessary for the development of a sustainable society (Littledyke, 1996, p. 5).

A new vision and direction for science education becomes possible by reconceptualizing its epistemological foundations and the value assumptions underpinning it. We argue that the epistemology of power which underpins the reductio-mechanist approach in science can be replaced by an epistemology of enchantment, in which the world can be known in terms of a seamless, indivisible, quantum web of interconnectivity and unity. Part of the mystery of scientific discovery thus arises from the paradox that we do not come to know nature by standing back from it to view it objectively. There is no getting outside it, for we are always, in our fundamental connection to it, a part of what it is that is being investigated and of what is itself becoming known.

While we have laboured to show that the current philosophy of science education is sponsored on the assumption that knowledge is power, and that power is expressed technologically as dominance and control through rendering nature predictable, it is clear that there have been attempts to break this pedagogic stranglehold or epistemic monopoly. An exemplar is the modern and constructive postmodern science education models on environmental education where the emphasis on affective needs of students are linked to interpersonal environmental education, intrapersonal reflection, and personal action (Littledyke, 2008). While this approach is laudable and is a step in the direction towards promoting more empathetic connections with each other and with nature, we propose that there is the need to go further and develop a theoretical framework for the epistemology of enchantment. Within the framework of the epistemology of enchantment we have postured a new rationale for the reenchantment of science education and for what we shall call 'reenchantment pedagogy'.

Throughout the piece we have been arguing that science education has relied primarily on an epistemology of power to provide the means for, and the various forms of technological intervention with nature. Given the commitment to an educational epistemology driven by western culture's obsession with power and control, the resources of nature have been exploited unabashedly and mercilessly in the name of progress. In the light of the monumental environmental crisis we now face, it is no surprise that gifted students have reservations about taking school science or indeed in entering a profession, which by virtue of its very epistemological persuasion, perpetuates a covert philosophy of environmental degradation. The unbridled belief in technology as a panacea for the ills of modern civilization remains self-stultifying, because it is often the new technologies to which we turn to solve our problems which in the end serve only to exacerbate them (Ashton & Laura, 1998; Laura, Marchant & Smith, 2008).

The first step in the reconceptualisation of the epistemology of power is to empower students to discover, not just intellectually but by way of affective resonance and moral intuition that the precious gift of human consciousness is not best used in the service of gaining knowledge to dominate, subjugate, suppress and subdue nature so that it suits our interests, needs and even our avaricious desires.

Reenchantment pedagogy represents an approach to seeing the world scientifically which reflects its foundations in empathetic epistemology, rather than in the epistemology of power. If the concept of educational knowledge is driven by the desire to interact empathetically with the rest of nature rather than master and molest it, the expression of the intention will be to find new ways of coming to know the world by connecting with the things of nature in ways and particularly through forms of technology designed to honour it. Empathetic epistemology does not predicate knowledge on the hypothesis that to know the world necessitates detaching oneself from it to achieve objectivity. To achieve the goal of empathetic interaction we must nurture in children the faculty of 'participatory consciousness' which integrates both intellectual and emotional elements that signal both right and left brain hemisphere activity (Laura & Cotton, 1999). Participatory consciousness involves attuning oneself to the rhythms and resonances of the natural environment in such a way that knowing requires intuition, moral sensibility, intellect and awe. Knowing cannot be reduced to the acquisition and cataloguing of facts. The earth itself may be usefully conceptualised on the model of a living organism comprising a vast network of web-like interactions and energy fields along the lines of Lovelock's (1979) Gaia Hypothesis. Scientific knowing is never just 'passive enquiry'. The facts are not simply 'out there' awaiting discovery by a detached objective observer. Scientific knowing comes to life because to know empathetically means to be engaged in the dynamic of affective resonance with the world around and in you. All scientific inquiry is thus active enquiry, based not solely on sensory faculties projected outwards as nothing more than a mode of intellectual inquiry. Reenchantment pedagogy inspires empathetic interpretation by virtue of being engaged personally in the enterprise of knowing. Knowing the world empathetically is more like learning how to dance to the rhythms of nature's teleology of resonance. What steps we take make a difference as to the way in which the dance unfolds, to its configuration and potential format. Knowing thus takes on a kind of magical quality, for there is no knowledge of the world of nature which does not reflect our own involvement and field of consciousness in the enquiry. The world is enchanted by virtue of the fact that 'what' we know and 'how' we understand what we know are conditioned by the level of participatory consciousness we bring to our scientific investigations. Reenchantment pedagogy provides more qualitative, mystery-nourishing foundations on which to re-engage students, especially those disadvantaged in rural contexts and those with more advanced learning needs.

5. RE-ENGAGING RURAL STUDENTS IN SCIENCE EDUCATION

When sourcing strategies to re-engage rural students in science education, teachers need to consider the implications of many influential factors. A mechanistic, transmissive style of pedagogy results in a negative stereotypic view of science as static and learning as passive memorization and lack of power or control over their own learning inhibits student emotional involvement and academic engagement (Tytler et al. 2008). Though small schools can often provide considerable individualization and a wide variety of activities within the school (Colangelo & Davis, 2003; Lake, 2008a), provisions generally for rural students may be inhibited by the inaccessibility to human and technical resources. Additionally, due to cost prohibitions, teachers in remote areas access less professional development programs (Thomson & De Bortoli, 2008). Low-socioeconomic conditions have also arisen in the literature as a possible hindrance to science achievement and further education in the science field (Squires, 2003).

Fortunately, contemporary science teaching has moved towards greater relevance of learning science connected to students' lives (Kenny, Seen & Purser, 2008). Tytler et al. (2008) suggest the need to also consider relevant social, ethical and personal contexts and to provide socially

engaging settings when teaching science. Considering the aforementioned concerns and taking advantage of research which suggests that students in rural schools feel that their teachers are more supportive (Young, 1998), and rural communities are more caring (Boylan et al. 1993), with large areas of natural environments, strategies to reengage rural students could include those that encompass connecting with the local community (Smith, 2008; Tytler et al. 2008). Such strategies, could encompass community members or experts in a scientific field sharing their passions about science by mentoring small group investigations based in the students' local area. One example is the CSIRO's 'Scientists in Schools' program. Sourcing funding to invest in a 'visiting scholar' program or 'visiting mentor' program to enable experts to travel to rural and remote schools to support teachers in science education creates opportunities for collaborative teaching and enriching student learning in ways the classroom teacher can't do alone. Additionally, more economical teacher professional learning opportunities are also increased through such programs that allow teachers to learn with support within their own educational context (Garet, Porter, Desimone, Birman & Yoon, 2001). Collaborative, relationship-based professional development is advocated within a teacher's own authentic learning contexts (Howitt, 2007; Kenny, Seen & Purser, 2008).

Authentic teaching and learning within community-based initiatives provides meaningful, real-life learning to re-engage rural students, who are in a more advantaged natural environmental context than their urban counterparts who may require excursions and to travel long distances to access similar educational contexts. Authentic learning contexts provide the foundations for supporting students to develop their own affective connection with nature (Littledyke, 2008). Investigations with intrapersonal reflections and interpersonal dialogue, beyond the usual question/answer or brief discussions, enable students to become emotionally involved in understanding their connections with nature and each other. Students also require time to engender creative and imaginative responses to the mysteries evoked by their affective emersion in nature. These are the essences of reenchanting the science curricula. Nonetheless, gifted students within rural contexts need further consideration to re-engage and re-enchant their learning.

6. RE-ENGAGING AND REENCHANTING RURAL GIFTED STUDENTS IN SCIENCE EDUCATION

Especially in a rural context, distance is an inhibiting factor to enrichment or extension activities to engage and challenge gifted and talented students (SiMERR, 2006; Smith, 2008; Smith & Smith, n.d.). Many gifted children also underachieve academically due to social and geographic isolation (Smutney, 2004). When the needs of gifted students are not addressed they may "suffer underachievement, boredom, frustration and psychological distress as a result" (Commonwealth of Australia, 2001, § 1.1) or inappropriate behaviours may be exhibited (Smith & Laura, n.d.). Delisle and Galbraith's (2002) study found that gifted students thought that school was boring, and this applies to science in particular (Lindahl, 2003; Lyons, 2006).

Gifted students learn more rapidly, are analytical thinkers, have an unusual memory and advanced reasoning capacity which means that they are often very insightful and are creative problem solvers (Merrotsy, et al, 2008; Smith & Laura, n.d.; Valpied, 2001). They benefit specifically from a pedagogy that is based on their interests, allows them to explore issues independently and socially, provides choice, is enquiry based, is challenging and engenders personal reflection (Smith, 2006). A more flexible curriculum that addresses gifted students' individual interests and needs is recommended in the research literature (Colangelo & Davis, 2003).

Gifted children exhibit such emotional intensity that they often portray affective characteristics of empathy, sensitivity and heightened self-awareness and are capable of very deep reflective thought, demonstrating high moral awareness with a rich inner life and an advanced sense of responsibility (Smith & Laura, n.d.; Valpied, 2001). "Consequently, the gifted child may exhibit a profusion of physical, emotional, sensual, imaginative, spiritual and intellectual energy, with resultant creativity and sophisticated ethical development" (Smith & Laura, n.d.). The affective attributes of gifted students need to be "nourished educationally, affirmed emotionally and supported consistently in a developmentally appropriate educational environment" (Smith & Laura, n.d.). This being so, gifted students need more than the intellectual challenge science education might offer them. Science students need a pedagogy based on empowering them to explore their own interests, discuss and debate issues relevant to them and their surroundings, not the autocratically dictated content evident in today's science lessons (Andrée, 2003; Falk, 2005; Lyons, 2006; Smith, 2008). Science education content and concepts need to be linked to the real world, the student's life, and relevance is vital for student understanding and engagement (Lyons 2006; Smith, 2006; Smith, 2008).

Lyons (2006) reported that gifted students, while highly interested in science, did not enroll in science courses as they were ambivalent about school science. Estrangement from school science appears to be related to the fact that learning experiences are not personally meaningful (Lake, 2008a; Lyons, 2006). Gifted students want variety in learning processes inclusive of being creative and imaginative in science programs (Lake, 2008b; Lyons, 2006; Osborne & Collins, 2001). Most importantly, gifted children need to be inspired, touched, or enchanted as it were by what we shall call the 'affective resonance' or emotional involvement in what is learnt that gives creative meaning and purpose not only to the educational process but to them personally. Science teaching and learning needs to nurture an empathetic way of knowing that encompasses meaningful experiences to enable the gifted child to become emotionally connected to concepts, each other, and with nature.

In rural and regional educational contexts, due to additional factors like limited access to resources and supporting personnel, gifted students are an under-served student population (Smith & Smith, n.d.). The many characteristics of gifted students suggest that they need to be challenged in a variety of environments, with a diversity of content, processes and outcomes (Smith, 2008). Provision of a wide range of educational programs both within and without schools enables gifted students to have options to support their current school program. The foundational perspectives that underpin these programs significantly influence the pedagogy that assists teachers in supporting the individual interests of students, their readiness and different learning styles (Smith, 2008). The idea of what we have called affective resonance is to enable students to develop empathetic perspectives within purposeful tasks that by their very nature engage students in a subject not only by way of intellectual ownership but also emotional involvement. This is in part the difference between seeing the world not only through one's eyes but with one's heart. This is what it means not just to learn passionately but to be passionate about what it is that one learns.

When science education is empathetically-based and, hence, renews its connection with nature, the child of reenchantment pedagogy with strong foundations in social and emotional aspects of teaching and learning can be birthed. Science education with more qualitative aspects of learning renews its capacity to re-engage students. 'Reenchantment' pedagogy has the potential to re-engage gifted children by stimulating in them a sense of awe, mystery, purpose, and engagement that gives coherence and integrity not just to their 'study' goals but to their 'life' goals. It is this nexus that connects their perspectives, thinking, living and learning of science

both empathetically and emotionally to the mystery and awe that teaching scientifically should engender. Laura and Cotton (1999) write, "the aim is . . . to achieve connection, relationship and balance through consciousness. Empathetic knowing involves seeing the fundamental interrelationships which express the character of the whole. We must learn to discern how our participation in the dynamic process of indivisible unity represents an investment in the future" (p.144).

7. AN ENCHANTMENT PEDAGOGY FOR RURAL GIFTED STUDENTS

The NSW Board of studies (2003) has introduced a more contexts-based physics and chemistry syllabi which is showing promise by way of increasing student interest and engagement. However, gifted children need more innovative learning processes (Lake, 2008a). They need to be re-engaged and reenchanted through the teaching and learning of science that inspires emotional and empathetic connection with each other and with nature. Guided by an epistemology of connectivity, empathetic educators can provide educative teaching and learning that seeks to connect students' hearts and minds to the natural rhythms of their environment. Tasks designed to capture the integrity of the surrounding ecosystems, where either the classroom ecosystem is immersed in its natural surroundings or the natural environment becomes the educational context. Some strategies could include excursions, small group project-based investigations, problem-solving using reciprocal teaching and cooperative learning, naturalistic classroom displays or discovery learning tables designed by the students themselves. These strategies allow students the time for interactive dialogue, connection with each other and nature within the teaching and learning processes with personal reflection that revitalizes their thinking about their world, and their actions, enabling links with their personal lives (Kelly, 2004; Smith, 2008). Provision of times for authentic learning, small group discussion, discovery learning, enquiry-based dialogue, ethical debate, self-generated ideas, and self-reflection based upon student interests and free choice could generate connectivity with self, each other, and nature (Andrée, 2003; Bolte, 1999; Brody, 2005; Brossard, Lewenstein, & Bonney, 2005; Falk, 2005; Littledyke, 2008). Connecting with community-based initiatives, such as the 'Clean-up Australia' campaign through the investigation and clean-up of a despoiled local creek, provide opportunities for altruistic service to the community while investigating and resolving a genuine concern within authentic, reflective learning contexts.

Rural students, in particular, are often surrounded by the natural environment in both their living and educational contexts and therefore, have greater opportunities to make real-life connections within real-life educational contexts set in their immediate surroundings. Gifted students need support in their learning just as other students do and their parents, mentors, peers, community members, guest speakers and teachers are needed to support students in their scientific explorations (Lake, 2008a). The relationships that are developed through mentoring within scientific explorations enrich the students' learning and can build life-long friendships based on mutual interests and respect. Allowing students the opportunity to identify issues that can be scientifically investigated while philosophically debated provides opportunities for enquiry learning that links the science with the ethical considerations of the project. Philosophical dialogue heightening moral consciousness and affective resonance should be utilized to reinforce empathetic interrelationships amongst participants, the emotional connection between ideas and the link between reflection and personal and purposeful scientific action. An enchantment pedagogy for rural gifted students builds on current science teaching best practice by taking advantage of their natural surroundings and encompassing more personal, empathetic, interactive, emotive, reflective, philosophical, interrelational opportunities within natural, real-life educational contexts that inspire awe of and emotional connection with

nature. Gifted children will then be drawn to science when the teaching of science takes place within an epistemological framework where the reenchantment of nature is sufficient to inspire emotional, empathetic, and ethical involvement in scientific discovery and understanding.

8. CONCLUSION

What has become evident from the foregoing reflections is the extent to which the teaching of science, and environmental education more specifically, has been influenced by the underlying view of knowledge as a form of power. This being so, teaching and learning has been more about transmitting factual knowledge, rather than creatively constructing knowledge as a way of connecting empathetically with the world of nature. As a consequence, the qualitative and emotional aspect of learning has been depleted, and the meaningfulness of learning experiences has in turn been reduced. In such conditions, it thus becomes increasingly difficult to make purposeful connections between educational outcomes, which cannot be transferred to personal living. At the very least, the awareness of making such qualitative links is hindered due to the lack of perceptions of empathy.

We argue for the reenchantment of science teaching and learning that encompasses Einstein's view of true science, who perceived that the experience of scientific discovery involves a sense of mystery at the awe-inspiring wonders of nature. We argue for an empathetic-based view of knowledge to underpin science education. Such a view promotes connection with others and nature. We then discussed the need for reenchantment pedagogy which involves provision of teaching science and learning contexts that combine intellectual challenge while building emotional relationships in order to make empathetic connections with others and the environment. Reenchantment pedagogy incorporating relational strategies and self-reflection heightens awareness of self, others and our relationship with nature. Contemporary science education needs to focus more upon teaching science in a way that fosters the mysteriousness of seeing the world scientifically. While we have detailed that the philosophy of the reenchantment of science teaching to re-engage gifted students' thinking and learning to appreciate the mysteries within scientific enquiry, the time has now come to explore just 'how' these new insights can be applied within the practical complexities of contemporary educational contexts. However, that is to be left for the next chapter in the narrative on empathetic pedagogy for the reenchantment of science.

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REFERENCES

Alsop, S., & Watts, M. (2000). Facts and feelings: Exploring the affective domain in the learning of physics. Physics Education, 35(2), 132–139.

Andrée, M. (2003, August). Everyday-life" in the science classroom: A study on ways of using and referring to "everyday-life. Paper presented at the ESERA Conference, Noordwijkerhout, The Netherlands.

Ashton, J., & Laura, R. (1998). Perils of progress: The health & environment hazards of modern technology, & what you can do about them. Sydney: UNSW Press.

Bolte, C. (1999). How to enhance students' motivation and ability to communicate in science class- discourse. Poster presented at the ESERA Conference, Kiel, Germany.

Boylan, C., Sinclaire, R., Smith, I. Squires, D., Edwards J., Jacob, A, O'Malley, D., & Nolan, B. (1993). Retaining teachers in rural schools: Satisfaction, commitment and lifestyles. In C. Boylan & M Alston (Eds.) Rural education issues: An Australian perspective. Wagga Wagga, NSW: Society for the provision of Education in Rural Australia (SPERA).

Brody, M. (2005). Learning in nature, Environmental Education Research, 11, 603–621.

Brossard, D., Lewenstein, B., & Bonney, R. (2005). Scientific knowledge and attitude change; the impact of a citizen science project, International Journal of Science Education, 27, 1099–1121.

Commonwealth of Australia. (2001). Senate Employment, Workplace Relations, Small Business and Education Committee: Report on The Education of Gifted and Talented Children. Retrieved August 2, 2008, from http://www.aph.gov.au/Senate/committee/eet_ctte/completed_inquiries/199902/gifted/report/index.htm

Cuban, L. (2001). Oversold and Underused: Computers in the Classroom, Harvard University Press: London.

Delisle, J., & Galbraith, J. (2002). When Gifted Kids Don't Have All the Answers: How to Meet Their Social and Emotional Needs. Minneapolis: Free Spirit.

Drury, C., & Allen, A. (2002). Report of the task force on the physical sciences, Department of Education and science, Dublin. Retrieved August 20, 2008, from www.sciencetaskforce.ie

Falk , J. H. (2005). Free-choice environmental learning: framing the discussion, Environmental Education Research, 11, 265–280.

Garet, M.S., Porter, A.C., Desimone, L., Birman, B.F., & Yoon, K.S. (2001). What makes professional development effective? Results from a national sample of teachers. American Educational Research Journal, 38(4), 915–945.

Healy, D. (1998). Cyberspace and Place: The Internet as Middle Landscape on the Electronic Frontier, in Porter, D. (ed), Internet Culture, Great Britain: Routledge.

Howitt, C. (2007). Pre-service elementary teachers' perceptions of factors in an holistic methods course influencing their confidence in teaching science. Research in Science Education, 37(1), 41-58.

International Bureau for Education. (2001). Science Education from 14-19. London: The Stationery Office. Retrieved August 21, 2008. http://www.parliament.thestationeryoffice.co.uk/pa/cm200202/cmselect/cmsctech/508/50815.htm#a57.

Juujarvi, S. (2006) Care Reasoning in Real-Life Moral Conflicts. Journal of Moral Education, 35, 197–211.

Kelly, B. (2004). Applying emotional intelligence: exploring the Promoting Alternative Thinking Strategies curriculum, Educational Psychology in Practice, 20, 221–240.

Kenny, J., Seen, A., & Purser, J. (2008). Supporting and resourcing secondary science teachers in rural and regional schools. Teaching Science, 54(3), 19–24.

Lake, D. (2008a) Perceptions of science in one-teacher schools. Teaching Science 54(3), 36-43

Lake, D. (2008b) Science Education: Innovation in rural and remote Queensland Schools. Education Research for Policy and Practice, 7(2),123-136.

Laura, R.S., & Cotton, M. (1999). Empathetic education: An ecological perspective of educational knowledge. Falmer Press.

Laura, R.S., Marchant, T., & Smith, S.R. (2008). The New Social Disease: From High Tech Depersonalization to Survival of the Soul. University Press of America. New York.

Lindahl, B. (2003). A longitudinal study of pathways to upper secondary school. English summary of dissertation. http://www.mna.hkr.se/ll/summary.pdf.

Littledyke, M. (2008). Science education for environmental awareness: approaches to integrating cognitive and affective domains. *Environmental Education Research*, 14(1), 1-17.
Littledyke, M. (1996). Science Education for Environmental Awareness in a Postmodern World. Environmental Education Research, 2(2), 197–214.
Liang, L. L., & Gabel, D.L. (2005). Effectiveness of a constructivist approach to science instruction for prospective elementary teachers, International Journal of Science Education, 27, 1143–1162.
Lovelock, J. E. (1979). Gaia: A new look at life on earth. Oxford: Oxford University Press.
Lyons, T. (2006). Different Countries, Same Science Classes: Students' experiences of school science in their own words. International Journal of Science Education, 28(6) pp. 591–613
Lyons, T. (2006). The puzzle of falling enrolments in physics and chemistry courses: Putting some pieces together. Research in Science Education, 36(3), 285–311.
Merrotsy, P., Cornish, L., Smith, H., & Smith, S. (2008). Kick 'em while they're down: A response to Dr Catherine Scott. Professional Educator, 7(3), 34–37.
Osborne, J., & Collins, S. (2001). Pupils' views of the role and value of the science curriculum. International Journal of Science Education, 23(5), 441–467.
SiMERR. (2006). Science, ICT and Mathematics Education in Rural and Regional Australia: The SiMERR National Survey. A research report prepared for the Department of Education, Science and Training. Retrieved July 29, 2008.
Smith, S. R. (2008). An ecological framework for dynamically and inclusively differentiating the curriculum.
One Voice International Conference, The Institute of Elemental Ethics and Education Westin St. Francis, San Francisco, USA, July 5 – 9.
Smith, S. R. (2006). The relationship between student diversity, instructional differentiation and academic engagement in inclusive primary classrooms. Unpublished PhD manuscript, The University of Newcastle, Australia.
Smith, S.R., & Laura, R.S. (n.d.). Repersonalizing educational ecologies to nurture the social and affective needs of gifted children. Asia-Pacific Journal of Gifted and Talented Education.
Smith, S. R. & Smith, R. J. (n.d.). Enhancing rural & regional gifted Student Experiences: exemplars of innovative enrichment practice. Innovation for Equity in rural education, First International Symposium for innovation in rural education (ISFIRE).
Squires, D. (2003). Responding to isolation and educational disadvantage. Education in Rural Australia, 13(1), 24–40.
Thomson, S., & De Bortoli, L. (2008). Exploring scientific literacy: How Australia measures up. The PISA 2006 survey of students' scientific, reading and mathematical literacy skills. ACER: Melbourne.
Tomlinson, C. A. (1998). Ten stupid things gifted and talented teachers do to compromise talent development. Paper presented at NAGC Convention, Louisville, KY, 14 November.
Tytler, R., Symington, D., Kirkwood, V., & Malcolm, C. (2008). Engaging students in authentic science through school-community links: Learning from rural experience. Teaching Science, 54(3), 13–18.
Valpied, J.L. (2001). Social and Emotional Needs of the Gifted Child. Paper presented at the 25th National Conference of the Australian Association of Special Education, Melbourne, Australia. http://jvalpied.com/resources/giftedness.ph
Young, D. (1998). Rural and urban differences in student achievement in science and mathematics: A multilevel analysis, School Effectiveness and School Improvement, 9(4), 386–418.

TEACHERS' MOTIVATIONS FOR WORKING IN RURAL SCHOOLS

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ABSTRACT

This paper reports on the analysis of qualitative and quantitative data concerning Australian teachers' motivations for taking up, remaining in, or leaving teaching positions in rural and regional schools. The data were collected from teachers (n = 2940) as part of the SiMERR National Survey, though the results of the qualitative data analysis were not published with the survey report in 2006. The teachers' comments provide additional insight into their career decisions, complementing the quantitative findings. Content and frequency analyses of the teachers' comments reveal individual and collective priorities which together with the statistical evidence can be used to inform policies aimed at addressing the staffing needs of rural schools.

Keywords: ***teacher attraction and retention, rural and remote schools, staffing, teacher attrition***

1. INTRODUCTION

The attraction and retention of quality teachers for rural and remote schools is a perennial problem for Australian education authorities. The combination of huge distances, a predominantly urbanized population and significant contextual and cultural differences between rural and urban communities contributes to a geographical imbalance in the demand and supply of teachers. This imbalance undermines the essential principle of equity in education for all Australian school children regardless of socioeconomic background or geographic location (MCEETYA, 1999).

To explore the different contexts of urban and rural schools, the National Centre of Science, ICT and Mathematics for Rural and Regional Australia (SiMERR Australia) undertook a survey to identify the key issues that rural teachers and parents see as affecting student outcomes in primary and secondary schools. The SiMERR National Survey (Lyons, Cooksey, Panizzon, Parnell & Pegg, 2006) collected base-line data comparing the characteristics, staffing profiles, motivations and professional needs of urban, rural and remote teachers of science, ICT and mathematics. The study collected a large amount of qualitative data from primary and secondary teachers which, due to space limitations, were only used incidentally in that report.

This paper presents the results of frequency and content analysis of teachers' comments regarding their motivations for initially taking up positions in rural schools, their reasons for remaining or leaving for the city, and the opinions of city teachers about what would attract them to rural schools. The results are presented with, and compared to, some of the quantitative findings from the SiMERR National Survey report.

2. LITERATURE REVIEW

Successive Australian government reports have identified difficulties in filling two types of teacher vacancies: those in rural and remote schools, and those in secondary mathematics, science and ICT (McKenzie, Kos, Walker & Hong, 2008; MCEETYA, 2004; MCEETYA, 2001). According to McKenzie et al. (2008) a lower proportion of principals in metropolitan schools report substantial difficulties in filling staff vacancies (21% primary, 35% secondary) than those in provincial (25% primary, 45% secondary) or remote (35% primary, 50%) schools. The authors further note that the highest rates of unfilled vacancy were in mathematics, where 18% of principals had re-advertised vacancies for mathematics teachers during 2006. Relatively high proportions of unfilled vacancies for science teachers were also reported. Labour market analysis (DEEWR, 2008) indicates that staffing shortages in these subject areas exist in most Australian states and territories. Among rural and remote schools this has a compounding effect, as shortages in any discipline area tend to be more critical in schools that are already difficult to staff.

Difficulties in attracting and retaining staff lead to a range of problems. First, such schools tend to have less-experienced teaching staff. McKenzie et al. (2008) reported that on average, teachers working in remote schools have five to six years less experience than teachers in metropolitan and provincial schools. Second, the lack of mentoring or contact with colleagues in their subject area is a major concern among rural and remote teachers, and for early career teachers in particular (Roberts, 2005). Third, inexperienced staff and high turnover rates are detrimental to staff morale, institutional memory and community perceptions (Squires, 2003). Fourth, staffing shortages lead to pressure for teachers to cover subjects outside their areas of expertise. The SiMERR National Survey found that science, ICT and mathematics teachers in rural schools were about twice as likely, and those in remote areas more than three times as likely as those in metropolitan schools to be required to teach a subject for which they were not qualified (Lyons et al., 2006).

Finally, there is evidence that staffing problems impact students' learning outcomes. Alloway Gilbert, Gilbert and Muspratt (2004) reported that Year 10 students in remote areas are concerned about the quality of teaching they experience and how this affects their learning. They are also affected by the knowledge that their teachers are often teaching in subject areas outside their areas of expertise. Elliot (2002, p. 6) notes that some rural and remote schools employ teachers who 'would not be acceptable in more affluent areas because of their poor training, poor spoken English skills, and poor classroom management skills'. This is not to say that all rural and remote schools are poorly serviced by teachers, but to highlight that those suffering chronic staffing problems are less likely to be able to provide a stable, rich and proficient foundation for student learning.

Academic outcomes in rural and remote schools are consistent with this argument. The National Benchmark reports (e.g. MCEETYA, 2008) consistently reveal higher levels of achievement in numeracy and literacy among Year 3, 5 and 7 students in metropolitan areas. The OECD's Programme for International Student Assessment (PISA) for 2003 and 2006 confirm that in science and mathematics, 15 year old students in metropolitan schools outperform those in provincial schools, who in turn have a higher mean achievement than students in remote areas (Thomson & DeBortoli, 2008).

The challenge for education authorities has been to develop and maintain effective strategies for attracting and retaining staff to work in rural and remote schools. The strategies vary between

states/territories, though common incentives include rural bonuses, additional leave, preference for transfer or permanency, rent or housing allowances. The contribution of this paper is to provide quantitative and qualitative data about the types of incentives and motivations that most affected teachers' decisions about going to, or leaving a rural school.

3. METHODOLOGY

Sample

The SiMERR National Survey was distributed to primary teachers and secondary science, ICT and mathematics teachers in four geographical regions: Metropolitan Areas, Provincial Cities, Provincial Areas and Remote Areas. These categories are based on the MCEETYA Geographic Location Classification [MGLC] (Jones, 2004). A breakdown of the 2940 responding teachers is shown in Table 1. Primary teachers made up about 54% of respondents. Of the secondary teachers, 580 were science teachers, 237 were ICT teachers and 547 were mathematics teachers. Overall, about 58% of respondents were from Provincial and Remote Areas, and about 69% taught in Government schools.

Table 1. Breakdown of teacher survey respondents by School System and MGLC Category

			Survey Respondent Type				
			Secondary Science	Secondary Mathematics	Secondary ICT	Primary	*Overall*
School System	**Government**	**Count**	**365**	**367**	**149**	**1138**	**2019**
		% of Row	18.1%	18.2%	7.4%	56.4%	100.0%
		% of Column	62.9%	67.1%	62.9%	72.2%	68.7%
	Catholic Systemic	**Count**	**107**	**87**	**45**	**319**	**558**
		% of Row	19.2%	15.6%	8.1%	57.2%	100.0%
		% of Column	18.4%	15.9%	19.0%	20.2%	19.0%
	Independent	**Count**	**108**	**93**	**43**	**119**	**363**
		% of Row	29.8%	25.6%	11.8%	32.8%	100.0%
		% of Column	18.6%	17.0%	18.1%	7.6%	12.3%
MSGLC Category of School	**Metropolitan Area**	**Count**	**148**	**142**	**60**	**230**	**580**
		% of Row	25.5%	24.5%	10.3%	39.7%	100.0%
		% of Column	25.5%	26.0%	25.3%	14.6%	19.7%
	Provincial City	**Count**	**120**	**132**	**47**	**362**	**661**
		% of Row	18.2%	20.0%	7.1%	54.8%	100.0%
		% of Column	20.7%	24.1%	19.8%	23.0%	22.5%
	Provincial Area	**Count**	**266**	**240**	**110**	**809**	**1425**
		% of Row	18.7%	16.8%	7.7%	56.8%	100.0%
		% of Column	45.9%	43.9%	46.4%	51.3%	48.5%
	Remote Area	**Count**	**46**	**33**	**20**	**175**	**274**
		% of Row	16.8%	12.0%	7.3%	63.9%	100.0%
		% of Column	7.9%	6.0%	8.4%	11.1%	9.3%
Overall	**Count**		**580**	**547**	**237**	**1576**	**2940**
	% of Row		19.7%	18.6%	8.1%	53.6%	100.0%
	% of Column		100.0%	100.0%	100.0%	100.0%	100.0%

About 60% of respondents were female, reflecting the high proportion of female teachers in primary schools. The majority of respondents were 41 years of age or older, with only 18% younger than 30 years of age. Approximately 64% of respondents were classroom teachers, 18% were Subject Coordinators or Heads of Department (secondary respondents only) and about 19% were Senior Management (Principals or Deputy/Assistant Principals).

Analysis

The survey asked four questions concerning teachers' decisions about choice of school location:

1. How influential were the following items on your initial decision to teach in a rural or regional school[1]?
2. How influential are the following items on your decision to continue teaching in a rural or regional school?
3. If you have left a rural or regional school for a metropolitan school, how influential were the following items?
4. How influential would the following items be in motivating you to take up a position in a rural or regional school? (only for teachers who had never taught in a rural or regional school).

Each question was followed by a list of items (see Tables 2-5 below) that respondents were asked to rate on a Likert-like scale according to whether they were: 'not influential' (1), 'somewhat influential' (2), 'very influential' (3) or 'extremely influential' (4). Mean scores and standard deviations were calculated for overall item ratings.

Teachers were invited to expand on the reasons for their decisions via open response sections following the first three sets of items. The open response sections were simply headed "Comments", with no prompts as to what should be addressed. Following Question 4, those teaching in metropolitan schools were also asked whether there was a compelling reason why they would not teach in a rural or regional school. Many teachers availed themselves of the opportunities to add comments, generating a substantial amount of qualitative data. For each question, two researchers separately coded a sample of 50 responses using constant comparative analysis (Maykut & Morehouse, 1994). The researchers then met to compare interpretations and reach a consensus on the final set of codes used to analyze the full data set. Once completed, the researchers met again for a final comparison of interpretations. Response codes were then sorted according to frequency, and are reported below as percentages of all comments for each question.

4. TEACHERS' MOTIVATIONS FOR MOVING TO RURAL OR REGIONAL SCHOOLS

Table 2 shows that teachers initially taking up positions in rural and regional schools were motivated primarily by job availability, placement by education authorities, and previously having lived in the same or a similar location. The least influential factors overall were the availability of rural or remote allowances, rent subsidies and affordable housing, though it should be kept in mind that some incentives only apply to remote area teachers.

[1] As it was unlikely that teachers would know the MGLC categories of their past or present school locations, an approximate definition for 'rural and regional' based on local population <50 000 was provided as a guide.

Table 2. Overall average ratings, standard deviations and valid N for the initial decision items (items are listed in descending order of mean rating) [Ratings on a 1 (Not influential) to 5 (Extremely influential) scale]

How influential were the following on your initial decision to teach in a rural or regional school?	Mean	s.d.	Valid N
Job availability	**2.41**	1.23	2388
Education authority placement	**2.26**	1.30	2416
Previously lived in the same or similar location	**1.99**	1.17	2408
Lifestyle change	**1.84**	1.07	2395
Family connections in the location	**1.78**	1.15	2410
Spouse's/Partner's employment situation	**1.70**	1.15	2402
Bond/contract with educational provider	**1.61**	1.10	2381
Promotion	**1.43**	.89	2372
Affordable housing	**1.38**	.75	2390
Rent subsidy	**1.21**	.59	2392
Rural or remote area allowance	**1.14**	.48	2389

In support of their ratings, 363 teachers provided comments about what initially motivated their decisions. The most prevalent comment (32%) related to the significance of bonding or placement by education authorities. For example:

> *I was a bonded student i.e. I received free education and in exchange agreed to teach in any location. Bring it back!* (Science Teacher, Provincial Area, SA)

> *It was a compulsory requirement from the Department for all teachers to have country teaching experiences.* (Mathematics Teacher, Metropolitan Area, SA)

> *I was imported from the U.K. in 1975 and went where I was sent.* (ICT Teacher, Provincial City, NSW)

Most of these comments were made by older teachers. The SiMERR National Survey reported significant differences ($p<.001$) in the rating patterns of older and younger teachers, with the former attributing a much greater influence to bonding and departmental placement policies.

The second most frequent comment type concerned a preference for rural lifestyles (17%) and teaching rural students (13%). For example:

> *I really wanted to teach and live in a small rural community. This was not only influenced by life-style and community, but also the students in rural schools.* (Mathematics Teacher, Provincial Area, VIC)

> *The sense of community in the country is a main draw card.* (Science Teacher, Provincial Area, SA)

> *I love teaching in Katherine, and although a fairly small town, I don't think I would like to be anywhere bigger - those big places get too crowded!* (Primary Teacher, Remote Area, NT)

The National Survey also reported significant sex differences in respondents' motivations, with females more likely than males to have taken up rural teaching positions due to their partners' employment situation. This consideration was reflected in 8% of the qualitative comments, for example:

I have taught in rural areas all my life. Most positions have been taken up due to proximity to husband's work. (Primary Teacher, Provincial Area, VIC)

My husband was working in the town, so I moved from one rural school to another. (ICT Teacher, Provincial Area, NSW)

My husband lived in the country so I went there after completion of uni. (Science Teacher, Provincial Area, SA)

Finally, the significance of strategic reasons, such as improving opportunities for permanent employment or promotion, was reflected in 8% of comments. For instance:

Participation in Senior Teacher Placement. Senior Placement for Remote Area provides Band 5-7 Remote schools with experienced staff to help support and mentor large number graduates who are sent to remote areas. (Science Teacher, Remote Area, QLD)

I was employed straight from University to work in a remote Aboriginal Community, on a permanent full time basis. I worked there for 2 1/2 years. The major influence was the ability to gain a permanent position as I was a single parent with two small children. (Primary Teacher, Remote Area, NT)

Almost 45% of comments from remote respondents mentioned departmental placement or strategic reasons as having impacted on their initial decisions.

5. TEACHERS' MOTIVATIONS FOR REMAINING IN RURAL OR REGIONAL SCHOOLS

Table 3 shows that teachers were motivated to stay in rural and regional schools by their enjoyment of the lifestyle, the sense of community spirit, and by employment and family links. Least influential were the availability of a rural or remote allowance, rent subsidies or opportunities to work with Indigenous students (though again, these would not be applicable to all respondent contexts).

Once again, these priorities were reflected in the qualitative data, with 28% of the 246 additional comments citing the lifestyle benefits of rural and regional communities, particularly in comparison to city living:

I choose to continue living and teaching in a small rural centre because of the lifestyle (Mathematics Teacher, Provincial Area, QLD)

The only reason to work back in the city would be lack of employment opportunities for my spouse. (Primary Teacher, Provincial Area, SA)

I would resign prior to returning to the city-metro area. This is not an option. I would find employment outside the system. (Primary Teacher, Provincial Area, NSW)

It is also worth noting that 37% of comments by teachers in remote schools reflected a similar appreciation of the lifestyle, community or school.

Table 3. Overall average ratings, standard deviations and valid N for the decision to remain items (items are listed in descending order of mean rating) [Ratings on a 1 (Not influential) to 5 (Extremely influential) scale]

How influential were the following on your decision to continue teaching in a rural or regional school?	Mean	s.d.	Valid N
Enjoyment of lifestyle	**2.87**	1.04	2253
Community spirit	**2.43**	1.00	2234
Spouse's/partner's employment situation	**2.16**	1.25	2245
Family connections in the location	**2.11**	1.24	2239
Smaller class sizes	**1.84**	.97	2232
Opportunity for promotion	**1.71**	.93	2239
Expense of moving to the city	**1.66**	.99	2225
Affordable housing	**1.61**	.91	2232
Opportunity to work with Indigenous students	**1.29**	.65	2232
Rent subsidy	**1.26**	.67	2222
Rural or remote area allowance	**1.24**	.63	2222

The second most frequent comment (27%) concerned partner and family situations:

> *I have continued to teach in Western region due to my family commitments and enjoyment of the lifestyle.* (Primary Teacher, Provincial Area, NSW)

> *My wife and I both enjoy teaching in a regional centre. We believe it is a better place to live and work than a large city or metropolitan region. It is also a safer place to raise a family, in our opinion.* (Mathematics Teacher, Provincial Area, WA)

> *I married a farmer!* (Mathematics Teacher, Provincial Area, VIC)

The National Survey reported a significant ($p<.001$) difference in the ratings of male and female teachers on this issue, with males rating the lower costs of living and quality of the lifestyle higher than did females while the latter attributed a much greater influence to family and partner considerations.

The third most common reason (12%) highlighted teachers' enjoyment of the school context and/or a preference for teaching "country kids":

> *Students and their families make the job a lot more personal and enjoyable.* (Mathematics Teacher, Provincial Area, QLD)

> *Kids are generally better behaved, nicer and less bothered by media hype, shopping malls and gangs.* (Mathematics Teacher, Provincial Area, VIC)

Finally, around 10% of comments reflected a professional interest in rural education or indicated that teachers were aware of, and influenced by, the shortage of experienced teachers in rural areas:

> *I support a large variety of students with special needs in a mainstream situation. The work suits my skills and interests. In some schools this sort of work is not available.* (Primary Teacher, Provincial Area, SA)

> *The choice of operating and participating in a 'School of the Air' environment limits my choice, as there are only five such regional schools available.* (Primary Teacher, Provincial City, WA)

There is a need for quality teachers in rural areas who are willing to stay and teach (Science Teacher, Provincial City, NSW)

6. TEACHERS' MOTIVATIONS FOR LEAVING RURAL OR REGIONAL SCHOOLS

Teachers who had at one time left a rural or regional school to work in a metropolitan school were asked to rate a range of items in relation to their influence on that decision. Table 4 summarises the mean ratings for these items. The most influential motivating factors for the majority of those who left were their partner's employment situation, improving educational opportunities for their own children and a sense of social isolation. Least influential, overall, were problems within the school or community.

Table 4. Overall average ratings, standard deviations and valid N for the 'decision to leave' items (items are listed in descending order of mean rating)

If you left a rural or regional school for a metropolitan school, how influential were the following?	Mean	s.d.	Valid N
Spouse's/partner's employment situation	**2.16**	1.27	678
Educational opportunities for your own children	**1.97**	1.18	682
Sense of social isolation	**1.88**	1.05	669
Sense of professional isolation	**1.75**	.94	679
Limited essential services	**1.72**	.96	655
Education authority placement	**1.71**	1.06	670
Reduced cost of travelling	**1.67**	.93	670
Opportunity for promotion	**1.65**	.95	687
Problems within the school	**1.51**	.90	668
Problems in the community	**1.43**	.83	666

Eighty-four of these teachers made additional comments about their motivations. The largest proportion of these (51%) confirmed the strong influence of family related influences on decisions to leave rural schools. The items heading Table 4 were strongly represented among teachers' comments, in particular the need to improve the educational opportunities for their own children (18%) or to relocate to a city due to changes in partners' employment situation (8%). For example:

[I left] because of my children's education needs and parenting support (Science Teacher, Provincial Area, TAS)

I felt it was time to expose my children to city life. They had spent most of their lives in country towns. (Mathematics teacher, Metropolitan Area, NSW)

My spouse stayed in the city whilst I was in the country on a two-year posting. (Primary Teacher, Metropolitan Area, QLD)

Around 12% of responses referred to teaching positions (including promotion positions) becoming available in metropolitan schools. Only three comments attributed the move to a dislike of the rural context or school. Nevertheless, these comments were illustrative of the sense of professional and/or personal isolation some teachers experience. For example:

I hated it. My initial placement was 20 hours driving from my home, extremely isolated and I was just 21 in my first year of teaching and no facilities or help. It was not good for the children I taught and not good for me. (Primary teacher, Provincial Area, NSW)

My position with Education Queensland at the time before the move required a great deal of travelling. My new position in the metropolitan area involves no travelling. (Primary teacher, Metropolitan Area, QLD)

7. INCENTIVES FOR MOVING FROM A CITY SCHOOL TO A RURAL OR REGIONAL SCHOOL

Respondents who had only ever taught in metropolitan schools were asked to rate a range of items based on their motivational value for taking up a position in a rural or regional school. Table 5 summarises the mean ratings for these items. The most potentially influential factors overall were smaller class sizes, a preference for future transfers, and affordable housing and rent subsidies. Factors with the least potential overall were opportunities to work with Indigenous students and smaller staff numbers.

Teachers in metropolitan schools were also asked whether there was a compelling reason why they would not teach in a rural school. Of 153 comments, about 46% maintained that ties to family and friends in the city would preclude their move to a rural or regional school. For example:

My family is based in a metropolitan area and I would not like to move them. Also, involvement in other activities which are metropolitan based. (Mathematics teacher, Metropolitan Area, TAS)

My husband works here and our three children are at school. I would consider a small rural school only after I had retired from teaching in the city. (Primary teacher, Metropolitan Area, ACT)

Table 5. Overall average ratings, standard deviations and valid N for the motivation to take up a rural or regional teaching position items (items are listed in descending order of mean rating)

How influential would the following be in motivating you to take up a position in a rural or regional school?	Mean	s.d.	Valid N
Smaller class sizes	**2.10**	1.00	603
Preference for future transfers	**2.09**	1.11	590
Affordable housing	**2.05**	1.02	598
Rent subsidy	**2.05**	1.03	597
Travel subsidy	**2.01**	1.03	593
Rural or remote area allowance	**1.98**	.98	596
More holidays	**1.93**	.98	595
Improved opportunities for promotion	**1.89**	.95	600
Smaller school staff	**1.63**	.83	595
Opportunity to work with Indigenous students	**1.42**	.71	596

A further 17% indicated that their partner's employment situation would rule out such a change:

My partner works in industry based in a major city and family life is established in metropolitan area. Therefore I am unlikely to look at a rural or regional centre because of family commitments. (Primary teacher, Metropolitan Area, VIC)

Presumptions about the relative lack of facilities, including ICT facilities, in rural areas were expressed in about 8% of comments, for instance:

My life is in the city - family and partner - and hence I would not move away. Also the resources available to us in the city are considerably greater than in rural areas (broadband, etc). (ICT teacher, Metropolitan Area, ACT)

Lifestyle in a really small community does not appeal to me. Access to facilities both social and supportive is more limited in small towns. (Mathematics teacher, Metropolitan Area, QLD)

8. CONCLUSION AND RECOMMENDATIONS

Individually, teachers' comments provide insight into personal motivations for working in, or leaving, rural and regional schools. Collectively, however, the frequency of particular themes shows the prevalence of such motivations among teachers and contributes to our appreciation of how staffing issues in rural schools might be addressed.

In terms of motivating teachers to take up positions in rural schools, the findings suggest that the system of bonded education authority placements was very influential in the past. Indeed, it is questionable whether many teachers would otherwise have taken up rural teaching positions, since evidence shows that beginning teachers tend to take up positions in locations similar to those in which they undertook their studies (Lyons et al., 2006). For most teachers this would be capital or large regional cities. It is also noteworthy that regardless of their expectations, once placed in a rural school many teachers remained because of satisfaction with the lifestyle, school and community. Without the initial impetus, however, it is unlikely these factors would have attracted many city-bred teachers.

The findings also indicate that once teachers have 'put down roots' in a location, they are less inclined to move. This suggests that different incentives are required for teachers at different stages of their lives and careers. The evidence shows that younger teachers are more motivated by financial inducements such as rent subsidies, affordable housing and allowances, which can be tied to bonded placements. On the other hand, the literature cautions against strategies that attract only young and/or inexperienced teachers, as this approach will not necessarily address the educational needs of rural and remote students. While experienced teachers are more likely to have family ties, they are also more motivated by promotion or preferential transfer.

A system of meaningful incentives to attract and retain experienced teachers might include:

- ongoing career development tied to retention (e.g., targeted leadership training);
- professional development (e.g., qualification for sabbatical after a period of service);
- improved leave entitlements (maturing at intervals of service);
- a progressive rather than flat system of financial incentives;
- inbuilt relief in staffing formulae for locations where there is difficulty employing relieving and short term contract teachers.

The findings reported in this paper can also be used to guide publicity campaigns promoting rural teaching among pre-service and experienced teachers. The teachers' comments provide clear evidence of the benefits to individuals and families of rural placements. There is no doubt that rural schools present a range of challenges, especially to the uninitiated, but the overwhelming sentiment of teachers who have experienced such placements is that, in the words of one science teacher, 'teaching in a small country school is just great!'

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REFERENCES

Alloway, N., Gilbert, P., Gilbert, R., & Muspratt, S. (2004). *Factors impacting on student aspirations and expectations in regional Australia*. Canberra: Department of Education, Science and Training.

Department of Education, Employment and Workplace Relations (2008). Education Professions Occupational Reports. Retrieved 18 December 2008 from http://www.workplace.gov.au/workplace/Publications/LabourMarketAnalysis/SkillShortages/OccupationalReports/EducationProfessions.htm

Elliott, A. (2002). *Response to Federal review of teaching and teacher education: Submission number RTTE 96*. Retrieved October 2005 from http://www.dest.gov.au/sectors/school_education/policy_initiatives_reviews/reviews/teaching_teacher_education/documents/rtte96_pdf.htm

Jones, R. (2004). *Geolocation Questions and Coding Index*. A technical report submitted to the MCEETYA Performance Measurement and Reporting Taskforce. Retrieved July 2005 from www.mceetya.edu.au/mceetya/default.asp?id=11968

Lyons, T., Cooksey, R., Panizzon, D., Parnell, A. & Pegg, J. (2006). *Science, ICT and Mathematics Education in Rural and Regional Australia: The SiMERR National Survey.* Canberra: DEST.

Maykut, S. & Morehouse, R. (1994). *Beginning qualitative research: A philosophical and practical guide*. London: Falmer Press.

McKenzie, P., Kos, J., Walker, M., & Hong, J. (2008). *Staff in Australia's schools*. Canberra: Australian Government Department of Education, Employment and Workplace Relations.

Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) (1999). *The Adelaide declaration on national goals for schooling in the twenty-first century*. Retrieved September 2005 from http://www.mceetya.edu.au/nationalgoals/natgoals.htm

Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) (2001). *Demand and Supply of Primary and Secondary Teachers in Australia*, prepared by the CESCEO National Teacher Supply and Demand Working Party. Retrieved July 2005 *http://www.mceetya.edu.au/mceetya/publications,11582.html#Teachers%20and%20teaching*

Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) (2004). *Demand and Supply of Primary and Secondary School Teachers in Australia.* Retrieved July 2005 *http://www.mceetya.edu.au/mceetya/publications11582.html# Teachers%20and%20teaching*

Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) (2008). *National Report on Schooling in Australia 2007*. Retrieved 15 December 2008 from http://www.mceetya.edu.au/verve/_resources/ANR2007Bmrks-Layout_FINAL.pdf

Roberts, P. (2005). *Staffing an empty schoolhouse: Attracting and retaining teachers in rural, remote and isolated communities*. Sydney: NSW Teachers Federation.

Squires, D. (2003). Responding to isolation and educational disadvantage. *Education in Rural Australia*, *13* (1), 24–40.

Thomson, S. & De Bortoli, L. (2008). *Exploring scientific literacy: How Australia measures up. The PISA 2006 survey of students' scientific, reading and mathematical literacy skills.* Melbourne: ACER.

BULLIES IN CYBERSPACE: HOW RURAL AND REGIONAL AUSTRALIAN YOUTH PERCEIVE THE PROBLEM OF CYBERBULLYING AND ITS IMPACT

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ABSTRACT

While ubiquitous access to the Internet continues to expand, along with the demands of the Net generation for constant connectivity and cyber-fun, there is increasing evidence of the disruptive effects of technology. The problem of negative psycho-social behaviors such as cyber violence and cyberbullying in schools has become widely recognised as a significant and serious threat. Acute and sometimes long-term physical and psychological damage to students has remained a major focus for research across the globe in the past decade. With the development of social networking technologies, further challenges for school communities have arisen and placed considerable pressures on educators to remain informed and vigilant to the developing phenomenon of cyberbullying. This paper investigates the literature on the developing phenomenon of cyberbullying and describes initial findings of a SIMERR (Centre for Science, Information Technology and Mathematics Education in Rural and Regional Australia) research project investigating the occurrence of cyberbullying in rural and regional schools, together with student perceptions of the phenomenon, its impact and their knowledge of e-safety strategies.

The outcomes indicate that cyberbullying, which impacts students' emotional wellbeing, is occurring in rural schools, but is rarely reported to teachers. In addition, while most students employ safety strategies when using the internet, they have either taught themselves these strategies or learnt them from their peers or parents. Very few reported learning safety strategies in school. These findings suggest that rural schools may need to strengthen their e-safety education programs and develop greater teacher awareness of the problem.

Keywords: ***cybersafety, cyberbullying, e-safety***

1. INTRODUCTION

The rapid adoption of technology in primary and secondary schools and within the homes of most school students has complicated the existing struggle to balance the right of students to access Information Communication Technology (ICT) for education and the need to ensure their safety. As Internet use has increased, so too have concerns about the prevalence of online harassment and other risks of Internet use to young people (Olweus, 2002).

Online harassment now has a new name, 'cyberbullying', which means "using the Internet or cell phones to send hurtful messages or post information that's designed to damage the reputation or friendships of others", according to the author of *"Cyberbullying and Cyber Threats"* (Willard, 2007). No one knows the exact number of teenagers worldwide who are on the receiving end, but it's significant with numerous studies showing that electronic bullying is prevalent in countries such as the UK, Canada, USA and Australia (Kowalski & Limber, 2007; Ybarra, Diener-West and Leaf 2007; Li, 2005).

Research into cyberbullying is still in its early stages and there are numerous definitions of the term. There is, however, a general consensus that bullying is aggressive behavior that intends to cause general distress or harm to the victim and that it involves an actual or perceived imbalance of power between the victim and the bully (Rigby, 2002). Bullying behavior is also generally seen as occurring repeatedly overtime. In other definitions bullying behavior is defined as unprovoked behavior (Olweos, Limber et al., 1999). Rigby (2002) raises a number of ambiguities with the generally accepted definitions of bullying and cyberbullying, including the difficulties of proving intent to hurt, repetition (for instance, when a student bullies several people once each) and the problems of identifying an imbalance of power in non-face-to-face or indirect bullying. Cyberbullying is a particular case in question where the bullies who may spread defamatory rumours via the internet may not be perceived as more powerful than the targeted victim/s (Rigby in Greene, 2006).

2. DEFINITIONS OF CYBERBULLYING

Definitions of cyberbullying generally focus on the repetition of cruel and hostile behaviors towards others. Bill Belsey (Belsey, ND), who coined the term 'cyberbullying' and is creator of the websites www.bullying.org and www.cyberbullying.org, defines cyberbullying as "the use of information and communication technologies such as e-mail, cell phone and pager text messages, instant messages, defamatory personal websites, and defamatory online personal polling Web sites, to support deliberate, repeated, and hostile behavior by an individual or group, that is intended to harm others" (Belsey in Li, 2007, p.2).

Similarly, Patching and Hinduja (2006, p.152) define cyberbullying as "willful and repeated harm inflicted through the medium of electronic text". They draw parallels between traditional bullying and this emerging electronic form, pointing out that the violence, malicious intent, repetition and power imbalance evident in the general bullying definitions are also relevant to the new permutation of bullying. Willard (2007, p. 1-2) classifies cyberbullying as 'being cruel to others by sending or posting harmful material or engaging in other forms of social aggression using the Internet or other digital technologies.' She identifies seven forms that cyberbullying can take:

- Flaming: Online fights using electronic messages with angry and vulgar language
- Harassment: Repeatedly sending nasty, mean, and insulting messages
- Denigration: Sending or posting gossip to damage someone's reputation or friendships
- Outing: Sharing someone's secrets or embarrassing information or images online
- Exclusion: Intentionally and cruelly excluding someone from an online group
- Cyberstalking: Repeated, intense harassment that includes threats or creates significant fear
- Impersonation: Pretending to be someone else and sending or posting material to create trouble or danger or to damage that person's reputation or friendships.

Wolak, Mitchell & Finkelhor (2007) emphasise that there is no standard definition of cyberbullying and suggest that the outcome of a study can be affected depending on how a researcher defines cyberbullying. They cite a number of studies, all with slightly varying definitions of cyberbullying or internet/online harassment. The reported incidences of being cyberbullied in these studies ranged from 6% to 43%. These definitions include 'bothering

someone online, teasing in a mean way, calling someone hurtful names, intentionally excluding or isolating a person, threatening someone and saying unwanted, sexually related things to someone' (Patchin & Hinduja, 2006, p. 158); 'use of the Internet, cell phones, or other technologies to send or post text or images intended to hurt or embarrass another person' (Moessner, 2007, p. 1) and 'threats or other offensive behaviour (not sexual solicitation) sent online to the youth or posted online about the youth for others to see' (Finkelhor, Mitchell & Wolak, 2000 in Wolak et al., 2007, p. S52). Not all definitions include sexually based harassment or specify that bullying must be repeated. For the purpose of this paper cyberbullying is defined as harassment using technology such as emails, computers, mobile and camera phones, video cameras, chat rooms and social networks such as *MySpace* and *Facebook*. This study builds on the survey instrument designed by Li (2007) and is therefore based on Li's definition of cyberbullying, which, like the definitions above, stresses hostile intent combined with rude, aggressive and threatening online behavior.

3. IMPACT OF CYBERBULLYING BEHAVIORS

The widespread use of virtual classrooms, Internet exploration and chat rooms has stretched the concept of the traditional classroom, and the popularity of social networking sites (e.g. MySpace, Facebook) blogging and text messaging have affected the way students communicate with and about each other, their teachers, school administrators and their schools. The instant and ubiquitous connectivity of the internet has the potential to lead to interactions and behaviors that are potentially harmful. The impact of cyberbullying and online aggression can be devastating. Increasing reports of youth suicide, as well as school violence, in the United States appear to be related to cyberbullying (Paulsen, 2003). Findings indicate that youth who are being harassed online report feeling unsafe and stressed at school Especially concerning is the finding that one in four youth targeted by rumours and threats online also report that they carried a weapon to school Ybarra et al 2007) Many experts say adults have been slow to respond to the problem, but awareness is increasing among teachers, parents and school communities (Kowalski, Limber and Agatson, 2008). School administrators and politicians are trying to address cyberbullying by introducing policies and by providing filtering software to prevent it from happening. Given the concerns about virtual predators, cyber harassment and cyberbullying, it is no surprise that more research is being called for and that greater emphasis is being placed on the need to develop effective strategies to respond to such risks and to prevent cyberbullying (Kowalski et al., 2008).

In Australia, experiences of bullying and peer hostility within school environments have been shown to increase the risk of negative academic and health outcomes for youth (Sawyer et al., 2000). Students who are persistently bullied are less connected to school and feel less cared for by people at their school (McNeely, Nonnemaker & Blum, 2002). According to McNeely and colleagues, students who feel cared for, respected and safe at their schools are far less likely to engage in violent, sexual, suicidal or substance abuse behaviors. Supportive classroom and school environments are essential for student wellbeing, engagement with school, motivation, academic skill development and general mental health (Catalano et al., 2004).

Only limited research has been done into the psychosocial effects of cyberbullying at this stage; however, Raskauskas and Stoltz (2007) report that so far, all studies in this area have shown negative effects similar to those of traditional bullying, including stress, fear, embarrassment and feelings of depression, hopelessness and powerlessness. Ybarra and Mitchell (2004) identified a relationship between depressive symptoms and being a victim of cyberbullying, with the likelihood of a person being victimised increasing with the number of depressive symptoms present. Another study showed that anxiety and depression are six and eight times

(respectively) more likely to be experienced by students who have been victims of bullying than those who have not been either victims or bullies (Dake, Price, Telljohan and Funk, 2003).

4. REPORTING EPISODES OF CYBERBULLYING

Research into mobile bullying on 770 British youngsters aged 11 to 19 (carried out for NCH by the British Market Research Bureau between 3 March and 6 April 2005) showed 28% of victims did not tell anyone they had been cyberbullied, 41% told a friend, 24% talked to a parent and 14% told a teacher (NCH, 2005). Of the 28% who remained silent, 31% said they did not tell anyone because 'it was not a problem', 12% had no one they wanted to tell, 11% did not think it would stop the bullying and 10% did not know where to go for help (NCH, 2005).

Another reason for not reporting cyberbullying incidents to adults that has emerged from the research is that children fear access to their mobile phones or the Internet will be removed or restricted (Campbell, 2005; Patchin & Hinduja, 2006; NCAB, 2007). From the research it is clear that a significant percentage of cyberbullying victims do not tell anyone about their experiences and if they do, they are much more likely to tell a friend than an adult.

5. METHODOLOGY OF THE PRESENT STUDY

The present research project aimed to investigate student and teacher perceptions of cyberbullying and e-safety strategies in rural Australian schools, and to enable participating schools, teachers, students and communities to develop awareness of the social, psychological and cognitive implications of cyberbullying. The study includes students (approximately 12-16 years old) and teachers from three rural schools in Australia. The major issues investigated were as follows:

- What do students and teachers perceive as cyberbullying?
- What is the incidence of cyberbullying in schools?
- What resources are needed to support and inform the school community?

Procedure

Students (Years 7-10) in participating rural schools were invited to complete a survey. All teachers (Years 7-10) were invited to participate in the completion of either an online or hardcopy survey. After completion of the surveys small groups of students and teachers were interviewed separately in focus groups to gain additional insights and augment data collected from the surveys.

The student survey

The student survey was designed to elicit information about perceptions of cyberbullying, incidence and the impact of episodes on feelings actions and behaviour. Section one of the survey, "About you", included information on gender, computer use and year level. Section two, "Cyberbullying – What I think", asked students to rate various scenarios that could be considered as cyberbullying from 1 (not cyberbullying) to 5 (severe cyberbullying). Section three, "My experience", allowed students to answer various questions on feelings, incidence of bullying and support in the area. Section four, "Safety strategies", looked at student knowledge of safety strategies to assist with Internet use and cyberbullying generally.

The teacher survey

The teacher survey focused on perceived prevalence and effect of cyberbullying at their school, and their views on how to reduce the occurrences of cyberbullying and develop educational programs to increase awareness among school communities.

Focus group discussions

After completing the surveys small focus groups of students and teachers from each school were conducted. Student focus groups consisted of 2-3 participants in years 8-10, (with at least two students from each year level). Teachers groups (10-20 in size) were interviewed separately to allow the investigative team to draw out information on perceived frequency of occurrences, impact, actual witnessed events and additional ideas for support of victims and prevention of cyberbullying in schools.

6. RESULTS

Student characteristics

The project surveyed 349 students from three schools in rural and regional New South Wales. Of those surveyed, 180 (52%) were male and 169 (48%) were female. The students were spread evenly across grade seven to grade ten. Most of these students used computers one to four times a week; however 42% of those surveyed used computers one or more times a day.

Incidence of bullying

The survey described bullying as an episode in which a student or group of students are aggressive towards a person, like swearing, yelling, punching or pointing; or excluding a person from a group, whispering about a person, staring and/or gossiping. When asked whether they had been bullied in school, 161 (46%) of those surveyed said yes.

Cyberbullying was defined as harassment or aggressive behavior using technology such as emails, computers, mobile phones, chat rooms or social networks (such as MySpace, Facebook). 76 (22%) of those surveyed said that they had been cyberbullied. The incidence of cyberbullying versus bullying is shown in Table 1.

Table 1: Percentages of rural students bullied in school and cyberbullied

	Bullied in school	Cyberbullied
Yes	46%	22%
No / Not sure	53%	78%
Blank	1%	0%

Unlike traditional bullying, cyberbullying is not face-to-face so people from outside of school can cyberbully students while they are in school, and students can cyberbully their classmates outside of school. For teachers considering the problem, therefore, the question of where the bullying takes place (in or out of school) is not as important as whether the bully was a school student at the time of the incident or someone from outside of school. Of the 76 students who said they had been cyber bullied 54 (71%) said that they had been bullied by other school students. The focus group discussions revealed that students were often cyberbullied by their peers out of school. As this comment by a teacher indicates, “It happens between students from the same school but it is often done at home because students know there is a greater chance of being caught at school”.

Most of the 76 cases of cyberbullying happened via email or in a chat room. In relation to the frequency of the cyberbullying, 65% said they were bullied less than four times, 17% said they were bullied four to 10 times and only 13% said they were bullied over 10 times. These results indicate that cyberbullying is occurring to many students in school and at home. Most of the students who were cyberbullied were bullied by their peers. Cyberbullying is therefore a real issue for schools, though it may not be as common, as visible or as frequent as traditional bullying.

Student perceptions of bullying

In order to understand students' perceptions of cyberbullying, students were asked to rate eight questions from 1 (not cyberbullying) and 5 (severe cyberbullying). The responses are summarised in Table 2. In brief, the survey of student perceptions showed:

- Sending mean or hurtful emails was rated 3.4 on average and was just as bad as sending mean or hurtful mobile phone messages, which was rated 3.5 on average.
- Students considered sending mean or hurtful messages straight to somebody to be just as severe as sending mean or hurtful messages about someone to others. (I.e. questions 1 and 2 and questions 3 and 4 have the same average response, 3.4 and 3.5).
- Posting embarrassing photos on the web or posting videos or photos of a person being bullied was seen as more severe bullying than sending mean or hurtful messages, as the average rating of these scenarios was 3.7 and 3.9 respectively.
- Excluding a student from your social networking sight was not seen as bullying by many students and, overall, was rated below average severity at only 2.4.
- On average, students considered spreading rumours about someone on a social networking site to be just as severe (3.5) as sending mean or hurtful emails to them or about them via email or mobile phone.

Table 2: Student ratings of severity for eight scenarios of cyberbullying

Question	Rating	1	2	3	4	5	Average
Sending emails to another person saying mean or hurtful things or making fun of them	Number	50	13	94	130	59	
	Percent	14%	4%	27%	37%	17%	**3.4**
Sending emails saying mean or hurtful things or making fun of someone to others	Number	49	31	80	108	78	
	Percent	14%	9%	23%	31%	22%	**3.4**
Sending mobile phone messages to another person saying mean and hurtful things or making fun of them	Number	46	23	62	128	86	
	Percent	13%	7%	18%	37%	25%	**3.5**
Sending mobile phone messages saying mean and hurtful things or making fun of of someone to others	Number	47	26	60	128	84	
	Percent	13%	7%	17%	37%	24%	**3.5**
Posting photos on the web that may embarrass another student	Number	53	21	48	79	145	
	Percent	15%	6%	14%	23%	42%	**3.7**
Videoing or photographing a person being bullied and posting this on the web	Number	58	11	26	56	195	
	Percent	17%	3%	7%	16%	56%	**3.9**
Excluding a student from your social networking site (e.g. MySpace, Facebook)	Number	98	86	88	50	24	
	Percent	28%	25%	25%	14%	7%	**2.4**
Spreading rumours about another person on social networking sites	Number	48	27	62	120	89	
	Percent	14%	8%	18%	34%	26%	**3.5**

Emotional responses to cyberbullying

Students were asked to describe how cyberbullying made them feel. In order of frequency, the most common feelings described were as follows:

- 40% reported feeling depressed, sad, hurt, horrible or sorry
- 30% indicated that they felt bullied, degraded, embarrassed, excluded or unsafe
- 20% said that cyberbullying made them feel angry, annoyed, disgusted or disappointed
- 10% seemed indifferent.

These responses support the finding that cyberbullying, like traditional bullying, negatively impacts students' emotional wellbeing, and concurs with the finding of previous research carried out by McNeely, Nonnemaker and Blum (2002).

Reporting and safety strategies

When students were cyber bullied, or knew someone who was, it was most common for them to tell their friends (about 45%) and second most common for them to tell their parents (about 30%). Only about 15% of those surveyed said that they would tell a teacher.

Most of the students surveyed (67%) knew safety strategies on the internet. The most commonly reported strategies were (ordered from most common to least): only talking or networking to friends or people they knew, not sharing personal information and avoidance measures such as not using certain sites or logging off when they felt unsafe.

About 40% of students taught themselves these strategies, while 20% had learnt strategies from their parents. Only 10% reported learning Internet safety strategies in school.

These results highlight a two-way gap in student-teacher interaction with regard to reporting of, and counteracting cyberbullying. First, students are only reporting a fraction of incidents to teachers. Second, teachers, it seems, are not playing a major role in educating students about the safe use of technology.

7. KEY CONCLUSIONS

Cyberbullying is occurring in rural and regional schools across Australian varying ways, through a number of technologies and media. However only a fraction of incidents are reported to teachers. The results of this study support previous research showing that cyberbullying is prevalent and may have a negative impact on students' emotional wellbeing, which in turn could interfere with their learning at school or their use of technology (Raskauskas & Stolz, 2007). Given the inevitable cross over of cyberbullying incidents occurring outside school but transferring into the school environment, it makes sense for schools to educate students about the safe use of technology and to recognise that many students are experiencing cyberbullying, which may negatively impact on their well being and psycho-social stability.

Cyberspace is changing rapidly and evidence suggests that there are many risks in interacting freely in social networking sites. In addition, the uptake of mobile phones among younger children puts them at greater risk of harassment, hurtful and defamatory messages, identity theft and social exclusion than ever before. There is also growing evidence that cyberbullying demands the development of e-safety frameworks and community education (Smith & Pepler, 2004). Willard's (2007) approach to countering cyberbullying is to recommend that schools

implement programs (such as acceptable use policies) and also engage non-school participants (police, parents and community groups and social agencies) in awareness raising and policy development.

While other countries (such as the UK) have already developed e-safety frameworks and community education, Australia is still in the early stages of policy and strategy development. There are numerous Australian anti-cyberbullying websites and resources online, however, these are no substitute for the implementation of preventative policies, frameworks and programs in schools. In addition, it will be important to develop programs specifically designed for the Australian situation, as it has been demonstrated that traditional anti-bullying programs do not always translate well to other countries. It is plausible that a 'one size fits all' approach would be unsuccessful in terms of cyberbullying, so the use of Australian data such as the present study could contribute to the development of Australia-specific policies and e-safety strategies.

REFERENCES

Belsey, B. No Date, 'Where *you are not alone*' [online] Available at http://cyberbullying.ca/

Campbell, M. A. (2005). Cyber bullying: An old problem in a new guise? Australian Journal of Guidance and Counseling, 15(1), 68-76.

Catalano, R.F., Haggerty, K.P., Oesterle, S. Fleming C.B., & Hawkins, J.D., (2004) 'The importance of bonding with schools for healthy development: Findings from the Social Development Research Group', *Journal of School Health, 74*(7), 252-61.

Dake, J.A., Price, J.H., Telljohan, S.K., & Funk, J.B., (2003) 'Teacher perception and practice regarding school bullying prevention', *Journal of School Health*, vol. 73, no. 9, pp. 347-55.

Department of Broadband, Communications and the Digital Economy, (2007) 'NetAlert', [online] Available at http://www.netalert.gov.au.

Dickerson, D. (2005) 'Cyberbullies on Campus' [Online] available at: http://law.utoledo.edu/students/lawreview/volumes/v37n1/Dickerson.htm#_ftnref54

Greene, M. (2006), ' Bullying in schools: A plea for measure of human rights' *Journal of Social Issues,vol* 62, no. 1, pp.63—79.

Kowalski, R., & Limber, S.P., & Agatson, P.W., (2008), *Cyberbullying*. Oxford, MA, Blackwell.

Kowalski, R. M., & Limber, S. P. (2007). Electronic bullying among middle school students. *Journal of Adolescent Health, 41*(6), S22-S30.

Li, Q. (2007). 'Bullying in the new playground: Research into cyberbullying and cyber victimisation' *Australasian Journal of Educational Technology* vol. 23, no 4, pp. 435-454.

McNeely, C.A., Nonnemaker, J.M., Blum, R.W., (2002) ' Promoting school connectedness: Evidence from the National longitudinal study of adolescent health' , *Journal of School Health*, vol. 72, no 4, pp. 138-46.

Moessner, C. (2007). 'Cyberbullying' *Trends & Tudes,vol 6*, no 4 pp 1-4, [online] available at http://harrisdealerpoll.com/news/newsletters/k2012news/HI_TrendsTudes_2007_v2006_i2004.pdf

National Coalition Against Bullying. (NCAB) (2007). Cyber-safety symposium report. Cyber-safety Symposium, Melbourne, 17-18 May 2007.

NCH (2005). Putting U in the picture: Mobile bullying survey 2005. United Kingdom. Retrieved March 5, 2008, from: http://www.nch.org.uk/uploads/documents/Mobile_bullying_%20report.pdf.

Olweus, D. (1993). *Bullying at school: What we know and what we can do*, Blackwell, Oxford.

Olweus, D. (2002), 'A profile of bullying at school', *Educational Leadership*, vol.60, pp. 12-17.

Olweus, D., Limber, S., & Mihalic, S. (1999). *Bullying prevention program.* Center for the Study and Prevention of Violence, Bounder, Colorado

Patchin, J. W. & Hinduja, S., (2006), 'Bullies move beyond the schoolyard: A preliminary look at cyberbullying' *Youth Violence and Juvenile Justice*, vol 4, pp. 148-169.

Paulson, A. (2003). Internet bullying. Retrieved March 20, 2008, from http://www.csmonitor.com

Raskaukas, J., & Stoltz, A. D. (2007). Involvement in traditional and electronic bullying among adolescents. *Developmental Psychology, 43*(3), 564-575.

Smith, P. K., Pepler D. et al. (2004), *Bullying in schools: How successful can interventions be?* Cambridge University Press, Cambridge

Rigby, K. 2002, *New perspectives on bullying*. Kingsley, Philadelphia.

Wolak, J., Mitchell, K. J., & Finkelhor, D. (2007). 'Does online harassment constitute bullying? An exploration of online harassment by known peers and online-only contacts' *Journal of Adolescent Health,* vol 41, pp. 51-58.

Willard, N. (2007). *Educator's guide to cyberbullying and cyberthreats*. Retrieved February 28, 2008, from http://www.csriu.org/cyberbully/docs/cbcteducator.pdf.

Ybarra, M., & Mitchell, K. J. (2004). Online aggressor/targets, aggressors, and targets: A comparison of associated youth characteristics. *Journal of Child Psychology and Psychiatry, 45*(7), 1308-1316.

Ybarra, M. L., Diener-West, M., & Leaf, P. J. (2007). Examining the overlap in Internet harassment and school bullying: implications for school intervention. *Journal of Adolescent Health, 41*(6), 42-50.

EFFECTS OF SCHOOL LOCATION ON THE SHAPING OF SCHOOL ORGANIZATION CULTURE IN KOREA

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ABSTRACT

The purpose of this study is to examine the effects of school location as a variable that influences school organisation culture. The context for the study is secondary schools in Korea under the compulsory transfer system for teaching staff, with school organisation culture being assessed by the perceptions of teachers. The results of the study identified that some aspects of school organization culture including the area of teaching subjects and student welfare were strongly determined by the personnel administration policy. On the other hand, three aspects of school organization culture including teaching character, collaboration and relationship with community were influenced by the school's location. The overall findings of this study suggest that the organization culture of a school is generally formed by both school location and the teaching personnel administration policy in Korea.

Keywords: ***school locations, school organisation culture, Equalisation policy, personnel administration policy***

1. INTRODUCTION

This study examines the effects of school location on the shaping of school organization culture. The context for the study is secondary schools in Korea under the compulsory transfer system for teaching staff, with school organization culture being assessed by the perceptions of teachers. Comparisons among perceptions of teachers working in cities, large rural centres and small rural centres were attempted to address the effects of the school location variable on school organization culture.

It has been argued that factors within the school as well as factors in the external environment to which the school belongs contribute to change in school organization culture (Hallinger & Leithwood, 1996; Hoy & Miskel, 2006; Park, 2003a). Recent research on the development and transformation of school culture indicates that a variety of factors can shape the cultural characteristics of a school (Leithwood, Jantzi, & Steinbach, 2000; Park, 2003a, b). These factors can be classified into internal and external factors. Internal factors refer to elements within the school community such as school leadership and characteristics of school members, etc. (Deal & Peterson, 1999; Park, 2003b). External factors of school culture refer to factors that support or constrain school culture from outside the school. These include educational policies of the nation (Park, 2003b; Power & Whitty, 1999) and local community culture (Hallinger & Leithwood, 1996; Hofstede, 1990; Park, 2003b). For instance, the national level of educational authorities can introduce new educational policies that must be implemented by the schools. Such policies can effect on the organizational cultures of schools.

A personnel administration policy applied to teaching staff in Korea aims to make schools equal or at least similar to other schools in terms of teachers' quality and school leadership. That is, the policy incorporates three key elements of school management: principals' leadership,

teachers' professionalism about teaching and the equal distribution of resources including finance. Therefore, it is hypothesized that school organization culture in the Korean context can be equal or at least similar among schools. If any differences are found, they may be due to other factors such as school locations and/or characteristics of school members. The major concern of this study is, therefore, to examine the main effects of school location on the shaping of school organization culture in Korea after removing compounding variances of individual teacher's characteristics. In order to explore the research question, two sub-research questions are investigated in this study:

1. Are there any proportional differences in the characteristics of teachers among schools grouped by school locations in Korea?
2. Are there any differences in teachers' perceptions of their school organization cultures among schools grouped by school locations after statistically controlling the effects of teachers' characteristics?

2. THE CONCEPT OF SCHOOL ORGANIZATION CULTURE

School organization culture has become an important research area of educational administration, since the concept of organisational culture was first introduced by Pettigrew in 1979 (Alvesson, 2002; Reichers & Schneider, 1990). Many researchers insist that the organization cultures of schools have a strong influence on the effectiveness of schools (Deal & Peterson, 1999; French, Bell & Zawacki, 2003; Hargreves, 1995; Schein, 1997). Several other terms such as school spirit and school climate, however, have been applied in attempts to capture the meaning of school organization culture. There has been a tendency in recent times for this term culture to be accepted by educational researchers and used to analyse the psycho-social phenomena of school (Maxwell & Thomas, 1991; Stolp & Smith, 1995).

Culture in an anthropological sense refers to the traditional ways of life of a particular group (Ember C. &. Ember M, 1993). It is knowledge guarded for posterity, to be handed down to next generation in oral or written form. It also implicitly engenders patterns of behaviour for doing specific tasks in specific ways. Culture, then, is one facet of human life which is learned by people as a result of belonging to some particular group and implies an expectation of continuity within a community. One sociological meaning of culture is the way of life or a set of ideas that is shared within a social organisation. It consists of the values and norms the members commonly ascribe to corroborate a given culture. Culture, in this sense, refers to the actual guidance or ways for defining common codes and rules for organisational members' behaviours. It also provides a sense of belonging to the members of an organisation.

For several decades, researchers in a number of different areas such as anthropology, archaeology, and sociology, have eagerly attempted to conjure up the meaning of culture or organisational culture. More than 100 different definitions of culture had, according to Ott (1989), been found by Kroeber and Kluckhohn through their literature review in 1952 and debates relating to the concept are still strongly opinionated. It is, therefore, obvious that there is no single definition of school organisation culture which can commonly be accepted. Although a single definition of organization culture cannot be accepted, most definitions of culture suggested so far connote a number of basic assumptions on which researchers studying organisation culture generally agree. For example, most researchers would agree that there is a phenomenon called 'culture' that exists in school and that it influences the behaviour of any school's members. Therefore, premises such as the existence of organisation culture, its uniqueness and effects can be seen to be widely accepted in both the general and academic communities. Researchers, however, do not agree with each other about issues relating to the

factors constructing school organisation culture because of each researcher's subjective viewpoint resulting from individual perspectives on intangible and abstract attributes (Park, 2003a).

Nevertheless, it is widely accepted that the organisation culture of a school can be seen as the core beliefs and values held by school members (Cummings & Worley, 2005; Maxwell & Thomas, 1991; Owens, 2002). It can also be inferred from previous studies that the core beliefs and values of a school that are fundamental and important determinants of school organization culture can be characterized by the degree of school members' perception of them. School organization culture in this study is, therefore, defined *as the core beliefs and values of a school commonly held by school members which can be examined through the perceptions of school members.*

3. THE TRANSFER SYSTEM APPLIED TO TEACHING STAFF IN KOREA

An important Korean educational policy applied to schools is an equalization policy among schools, which has been sustained since 1969 (Ministry of Education, 2006). The policy is implemented to make schools equal or at least similar to other schools in terms of educational conditions. The conditions include principals' leadership, teachers' professionalism about teaching and the equal distribution of resources including finance.

The equalization of the principal leadership among government schools is achieved by the restriction of a principal's tenure at a school. The principal of a government school works for the school for a predetermined period of time, usually 4 years per school. After working 4 years, he/she is transferred by the Office of Education to another school. This policy applies only to the principals of government schools. In the private sector, the board of each school has autonomy for the appointment of the principal and for the decision about his/her tenure.

The equality of the teachers' professionalism about teaching is achieved by requiring teachers to transfer to another school every four or five years. In addition, teachers in some Provinces which have rural and/or isolated areas are transferred to rural schools after 8 or 10 years of working in city schools. They should work in the school for 3 or 4 years. After completing this compulsory period, they can be transferred to city schools. The intention of the policy of circulating teachers is to make teachers' quality equal or at least similar among schools and between regions.

Finally, the financial resources for schools are also distributed to schools based on the number of students enrolled. The national and local governments provide financial subsidies to private schools as well as to government schools. The independence of private schools with regard to deciding the size of tuition fees is not given to individual schools under the educational equalization policy. Instead, high school students' tuition fees are controlled by the local educational agencies. They have the authority to decide the amount of tuition fees which are applied equally to all high school students within the area, regardless of government or private schools status.

4. DEFINING SCHOOL LOCATIONS

Defining rural areas is slightly different from country to country. For example, a report published in Australia defines rural areas as "all areas outside of metropolitan settlements" (Kenyon, Sercombe, Black, & Lhuede, 2001; p.5). In Korea the rural areas are generally defined on the basis of the Korean administrative system. That is, if the population of an administration

unit is greater than 1 million, it will be distinguished as metropolitan, 50,000 to 999,999 residential regions are 'Si' (city); less than 50,000 residential regions are defined as 'Gun'. In 2008, there are 7 metropolitan cities, 72 si (city) and 94 gun (county) in Korea. In general, the term 'rural' in Korea refers to Gun areas. In addition, 'Gun' consists of two administrative units. One is large rural centre called 'Eup' with population more than 20,000. The other is small rural centre called 'Myun' with population below 20,000.

As shown in the table 1, the population of Korea in 2005 is approximately 47million and about a half of the population is living in the 7 metropolitan cities such as Seoul, Pusan and Daegu. The remaining half of the population is in the smaller cities and rural regions. In the 1970-1980's, there had been a rapid industrialization in Korea which brought dynamic change to Korea's population distribution. In other words, along with the industrialization the population in rural areas decreased dynamically. The sudden transition of the rural population into cities has been leading to the closing down of small schools, and actually from 1980 to 2006, more than 5,000 schools have closed or been merged with neighbouring schools.

Table 1. Distributions of the population by locality in Korea, 2005

Locality		**Population**	**Ratio (%)**
Gun (Rural)	Eup (Large Rural centres)	3,922,597	8.34
	Myun (Small Rural Centres)	4,781,138	10.16
Si (Cities)		16,191,781	34.42
Metropolitan cities		22,145,918	47.08
Total		47,041,434	100

(Source: 2005 Census of Population, Korean Bureau of Statistics)

5. THE RESEARCH DESIGN

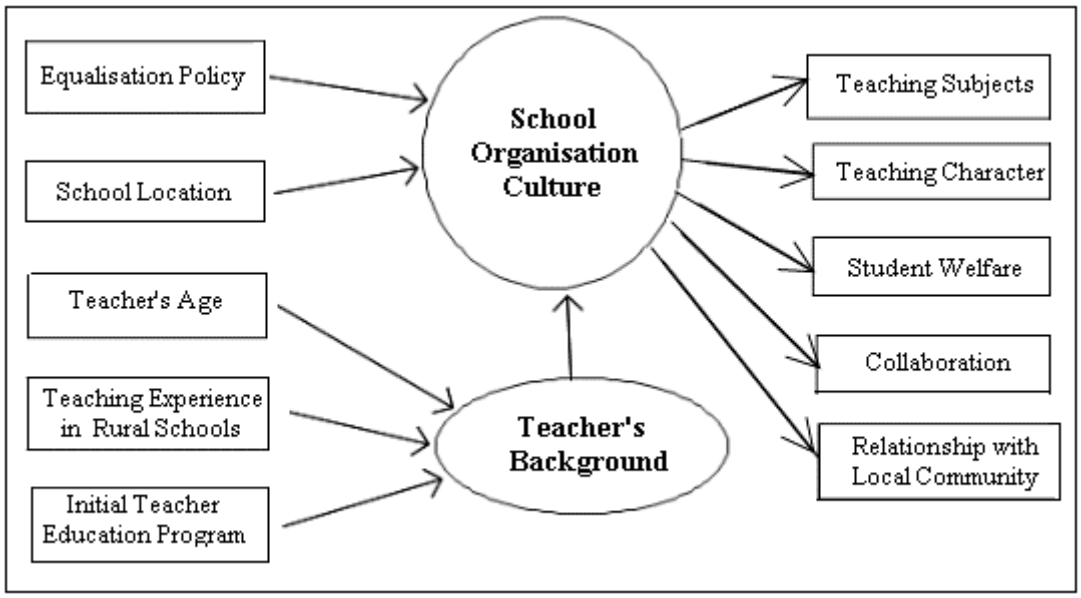
The focus of the study is to examine the direct effect of the school location variable under the compulsory transfer system for teaching staff in Korea. Many research findings (e.g. Capper, 1993) show that this variable has strong effects on the building of school culture. In order to assess the effect, school teachers' characteristics including teachers' age, teaching experience and teaching attitudes need to be employed as covariates because they are considered as important internal variables creating school organization culture. Figure 1 depicts the research design of the current study.

6. METHODOLOGY

The schools located in 3 residential regions including City (Si), large rural centre (Eup) and small rural centre (Myun) were sampled and invited to the study. Schools in the metropolitan cities were excluded because they have own independent Educational offices and the transfer of their teachers has been limited within the jurisdictional areas.

The data were collected over five weeks from early March 2007 until April 2007. Around 40 high schools from three provincial areas were chosen at random and 903 teachers from the schools were invited to participate in the study. Of the total samples, 347 teachers were from city schools, 281 teachers (31.2%) and 274 teachers (30.4%) from large rural centres and from small rural centres. Table I presents the distribution of sample teachers by school location and teaching experience. As shown in the table 2, 39.4% of samples had 10 to 20 years of teaching experience, while approximately 23% of them were less than 10 years of teaching experience.

Teachers having teaching experience less than 10 years are proportionally more in city schools (28.8%) than in rural schools.



[Figure 1] Research Design of the Study

Table 2. Distribution of teachers by teaching experience

School location	Teaching Experience			Total
	under 10 years	From 10~ 20 years	over 20 years	
City	100 (28.8%)	145 (41.8%)	102 (29.4%)	347 (100%)
Large rural centre	52 (18.5%)	119 (42.3%)	110 (39.1%)	281 (100%)
Small rural centre	52 (19.0%)	91 (33.2%)	131 (47.8%)	274 (100%)
Total	204 (22.6%)	355 (39.4%)	343 (38.0%)	902 (100.0%)

7. SCALES USED TO MEASURE SCHOOL ORGANISATION CULTURE

Five aspects of school organisation culture were identified from the review of several existing studies: teaching subjects, teaching character, student welfare, collaboration and relationship with local community. The questionnaire developed by the researcher comprised these scales, each of which consisted of several items. Five point Likert scales from 1, not important or certainly false, to 5, extremely important or certainly true, were used. A higher score of each item indicates that individual teachers have more positive attitudes towards the scales.

1) *Teaching Subjects*: This scale was made up of 8 statements that were intended to measure each teacher's attitude toward his/her professional knowledge and commitment about

teaching subjects. Example of items includes "Teachers at my school have a professional attitude towards their teaching".

2) *Teaching Character*: The scale has 6 items to measure each school's endeavours towards character development of students. Students' character development is one of the most important educational goals in Korean educational system. This is similar to how Western countries including Australia emphasize the development of students' citizenship. "Teachers at my school try to develop students' character" and Teachers help students to develop their personality and character" are examples of this scale.

3) *Student Welfare*: This scale comprises 8 items to measure teachers' student caring. This part of school organization culture can be regarded as an important factor that can make a school different from others. "If students have difficulty, teachers take time to help them" is an example of items included in this scale.

4) *Collaboration*: The scale comprises 4 items to measure teachers' collaboration with other teachers. "Teachers have a strong school community sense", If I have difficulties, my colleagues help me to overcome the problems" are examples included in this scale.

5) *Relationship with Local Community*: The local community schools work at is an important factor that can shape the cultural aspects of a school. Therefore, the scale measuring the degree of interaction with outside school community was included in this study that comprises 5 items. "Teachers communicate effectively with parents and other community members." and "My school provides learning opportunities for parents and other people living the community." are some examples included in this scale.

The items included in the questionnaire were factor analyzed to confirm the factor structure of the instrument. Table 3 presents a summary of the scales confirmed by the results of factor analyses and their reliabilities (α). The reliabilities of the scales were high, ranging from .73 to .81.

Table 3 Scales, Number of Items and Reliability coefficients of the Questionnaire

Scales	No. of Items	α
Teaching Subjects	8	.78
Teaching Character	6	.74
Student Welfare	8	.81
Collaboration	4	.75
Relationship with Community	5	.73
Total	31	

8. RESULTS OF THE DATA

First, a series of one-way ANOVA was conducted to examine differences in the scale means among school groups divided by location. Consequently, ANCOVA procedures were conducted using teachers' age, teaching experience and initial teacher education program obtained teaching license as covariates.

Table 4 presents the results of the ANOVAs for the five sub-scales and whole scale of school organization culture. The results revealed that the differences among school groups were

significant, except for teaching subjects scale. Post Hoc comparisons using the Scheffe procedures were conducted to identify the sources of the group differences. The results revealed that there were significant mean differences between city and rural areas for the Teaching Character and Student Welfare scales. For the scales of Collaboration and Relationship with community, the means of city schools were significantly lower than those of schools in rural schools regardless of large or small rural centres. What this analysis implies is that the effect of school location is strong for the shaping of school organization culture. There were no differences among school groups for the scale of teaching subjects. The result suggests that the perception of teaching subjects is influenced by the equalization policy.

Table 4. Results of ANOVAs for the Scales of School Culture

Scales	Location	N	M	SD	*F*	*Post Hoc*
Teaching subjects	city	347	3.64	.43	2.30	
	Large rural centre	281	3.69	.45		
	Small rural centre	275	3.71	.44		
Teaching Character	city	347	3.49	.48	7.14***	City*small
	Large rural centre	281	3.58	.48		
	Small rural centre	275	3.63	.44		
Student Welfare	city	347	3.80	.43	4.32*	City*small
	Large rural centre	281	3.85	.43		
	Small rural centre	275	3.90	.40		
Collaboration	city	347	3.42	.56	12.81***	City*large, City*small
	Large rural centre	281	3.55	.57		
	Small rural centre	275	3.64	.52		
Relationship with Local Community	city	347	3.43	.50	12.09***	City*large City*small
	Large rural centre	281	3.57	.51		
	Small rural centre	275	3.61	.47		

(* significant at .05 level; ** significant at .01 level; *** significant at .001 level)

A series of ANCOVAs were conducted. These analytic models included teachers' personal backgrounds such as teacher's age, teaching experience and initial teacher education program as covariates because it is likely that the variables will affect teachers' perceptions of school organization culture. The results showed that there were significant mean differences among the groups, $F(2, 901) = 10.62$, $p=.000$. In order to identify the source(s) of the differences, a series of ANCOVAs for each scale were consequently examined. The summaries of the results are presented in Table 5.

Table 5 shows the sources of the differences of school organization culture among the school groups. Collaboration factor was the major source of the difference among them. The school location variable also affected the shaping of relationship with local community and teaching character. However, the significant difference for Student Welfare found previously disappeared when teachers' backgrounds were statistically controlled. The addition of the teachers' personal variables removed the effect of school location which had been significant.

Table 5. Results of ANCOVAs for the Scales of School Culture

Scales	Location	N	Estimated M	SE	*F*	*Post Hoc*
Teaching subjects	city	346	3.66	.02	.68	
	Large rural centre	280	3.68	.03		
	Small rural centre	275	3.70	.03		
Teaching Character	city	346	3.49	.02	6.68***	city*large city*small
	Large rural centre	280	3.58	.03		
	Small rural centre	275	3.63	.03		
Student Welfare	city	346	3.81	.02	2.43	
	Large rural centre	280	3.84	.03		
	Small rural centre	275	3.89	.03		
Collaboration	city	346	3.40	.03	14.55***	city*large city*small
	Large rural centre	280	3.56	.03		
	Small rural centre	275	3.65	.03		
Relationship with Local Community	city	346	3.43	.03	11.30***	city*large city*small
	Large rural centre	280	3.57	.03		
	Small rural centre	275	3.62	.03		

(* significant at .05 level; ** significant at .01 level; *** significant at .001 level)

9. DISCUSSION

This study examined the effect of school location on the shaping of school organization culture in Korea. In order to investigate the research question, a cross-sectional survey method was designed employing school location as an independent variable and teachers' perceptions on the cultural aspects of their schools as dependent variables. A number of important findings were identified from the analyses of data using ANOVA and ANCOVA procedures. Issues and implications from the findings will be discussed, followed by the conclusion of this study.

First, the data analysis showed that individual characteristics of rural school teachers in Korea are different from those of OECD countries including Australia (OECD, 2005). These countries are suffering from shortage of teachers, especially experience teachers working in rural areas (Boylan & McSwan, 1998). However, in Korea, teachers in rural schools have more teaching experiences than those in city area schools. Further, teacher supply is not an issue in Korean rural schools, as the staff transfer mechanism between rural and city schools is applied to all teachers employed by each local Office of Education. It has been identified that students living at rural areas have educational disadvantages associated with many factors including shortage of experienced teachers and SES, etc. The Korean policy makes a basic condition to rural students equal, by placing more experienced teachers in rural schools than city schools.

Second, there was a significant mean difference in teachers' perceptions of their school organization cultures between city and rural schools. That is, teachers at rural schools perceived their school organization culture more strongly than those at city areas. The difference may be due to teachers' individual characteristics or by the school location. In order to identify the cause, the current research used a series of ANCOVAs to eliminate compounding variances of individual teacher's characteristics. The results showed that there were still noticeable

differences in teachers' perceptions about their school organization culture between city and rural schools. The results suggest that school location is a significant impact factor that affects school organization culture.

Further analysis identified that the means of teaching subjects and student welfare did not differ among school groups. The results imply that these dimensions of school culture that are related to the individual teacher' teaching knowledge and attitudes are somewhat equalized by the personnel administration policy in Korea. On the other hand, there were still significant mean differences in the other three dimensions of school culture reflecting the characteristics of school locations: Teaching Character, Collaboration and Relationship with Local Community. School educators and/or educational policy makers in city schools should, therefore, carefully plan to establish educational goals considering these scales.

Finally, organizational culture of rural schools is different from that of city schools as the emphases in educational goals of rural schools can be quite different from those of city schools. In the Korean context, rural students' home backgrounds including SES and parents' level of formal studies are severely lower than those of city students (Park, 2003a). The results of the current study imply that rural school educators including teachers are concerned about Teaching Character higher than city school teachers. Therefore, the effectiveness of school management should be measured through various outputs reflecting each school's educational goals and philosophies of a school.

10. CONCLUSION

The overall findings of this study suggest that the culture of a school in Korea is generally formed by both school location and the teaching personnel administration policy. Some aspects of school culture including the area of teaching subjects and student welfare are strongly determined by the policy. On the other hand, the other three aspects including teaching character, collaboration and relationship with community are influenced by the school location, which implies that school organization culture can be significantly influenced by the school location factor. Therefore, school location variable should be included in future research dealing with school organization culture and its effectiveness. In addition, this study identified that there were quite difference between organizational culture of rural schools and that of city schools. School administrators and educational authorities of local and/or national levels should, therefore, reflect this difference when designing policies for developing and/or assessing school management.

REFERENCES

Alvesson, M. (2002). *Understanding Organizational Culture*. London: SAGE.

Boylan, C. & McSwan, D. (1998). Long-staying teachers: Who are they? *Austalian Journal of Education*, 42(1), 49-65.

Capper, C. A. (1993). Rural community influences on effective school practices*, Journal of Educational Administration, 31* (3), 20-38.

Cummings, T. G. & Worley, C. G. (2004). *Organization Development and Change (8th ed.)*. South Western: Thomson.

Deal, T. E. & Peterson, K. D. (1999). *Shaping School Culture: The Heart of Leadership*. San Francisco: Jossey-Bass.

Ember, C. R. & Ember, M. (1993). *Cultural Anthropology (7th ed.)*. New Jersey: Prentice Hall.

French, W., Bell, C. H., & Zawacki, R. A. (2003). *Organizational Development and Transformation (6th Ed.)*. Boston: MacGraw-Hill.

Hallinger, P. & Leithwood. (1996). Culture and educational administration: a case of finding out what you don't know you don't know. *Journal of Educational Administration, 34* (5), 98-116.

Hargreaves, D. H. (1995). School culture, school effectiveness and school improvement. *School Effectiveness and School Improvement, 6* (1), 23- 46.

Hofstede, G. (1990). *Cultures and organizations: software of the mind*. London: McGraw-Hill.

Hoy, W. K. & Miskel, C. G. (2006). *Educational administration. theory, research, and practice* (5th ed.). NY: McGraw-Hill.

Maxwell, T. M. & Thomas, R. A. (1991). School climate and school culture. *Journal of Educational Administration, 29* (2),72-82.

Ministry of Education Korea, (2006). *Education in Korea*. Seoul, Korea.

Kenyon, P., Sercombe, H., Black, A., & Lhuede, D. (2001). *Creating better educational and employment opportunities for rural young people*. NYARS: Hobart, Australia.

Leithwood, K., Jantzi, D. & Steinbach, R. (2000). *Changing Leadership for Changing Times*. Buckingham: Open University Press.

OECD (2005). *Teachers Matter: Attracting, Developing and Retaining Effective Teachers*. OECD: Paris

Ott, J. S. (1989). *The organizational culture perspective*. Chicago: The Dorsey.

Owens, R. G. (2002). *Organizational Behavior in Education*. Boston: Allyn & Bacon.

Park, S.C. (2003a). *High School Culture in the Korean Context*. Unpublished doctoral dissertation, Macquarie University, Sydney, New South Wales, Australia.

Park, S. C. (2003b). The Impact of Internal and External Factors on Christian School Culture in South Korea: A Document Content Analysis. *Journal of Christian Education, 46* (1),43-58.

Power, S. & Whitty, G. (1999). Market forces and school culture. In J. Prosser (ed.). *School culture*, (pp. 15 – 29). London: Paul Chapman.

Prosser, J. (2002). *School culture* (ed.). London: Paul Chapman.

Reichers, A. E. & Schneider, B. (1990). Climate and Culture: An Evolution of Constructs. In B. Schneider (ed.), *Organizational Climate and Culture*(5-39). San Francisco: Jossey-Bass Publishers.

Schein, E. H. (1997). *Organizational culture and leadership.* (2nd ed.). San Francisco: Jossey-Bass.

Sergiovanni, T. J., Kellerher, P., McCarthy, M. M., & Wirt F. M. (2004). *Educational Governance and Administration.* (5th. ed.). Boston: Pearson.

Stolp, S. & Smith, S. (1995). *Transforming school culture: Stories, symbols, values & the leader's role.* (ERIC document reproduction service No. ED 386 783).

SOCIAL COMPUTING: REDUCING ISOLATION IN REMOTE AUSTRALIAN SCHOOLS

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ABSTRACT

With the increasing expectation that schools will make more use of ICT to support learning, more professional development opportunities need to be provided to assist teachers to realise the potential of ICT. Social computing provides a solution to the dilemma of connecting remote schooling communities for both teacher professional learning and student learning. A national project, involving teachers at remote schools in five Australian states, is described. The benefits and challenges of using social computing to enhance learning for both teachers and students are shared. Key project achievements are identified from management, teacher and student perspectives. The way forward is mapped for this project, and for other projects attempting to achieve similar goals, in reducing isolation in remote Australian schools by utilizing social computing.

Keywords: ***social computing, isolation, teacher professional learning, student learning, remote schools***

1. INTRODUCTION

In Australia, the national *Pedagogy Strategy: Learning in an Online World* requires that information and communication technology (ICT) be used to allow students to communicate, share, collaborate, and become part of broader communities (MCEETYA, 2005, p. 5). Similarly, the pedagogy strategy requires that ICT be used to allow teachers to connect with colleagues and students, and participate in professional learning programs (MCEETYA, 2005, pp. 6-7). This use of ICT to enhance learning becomes particularly relevant in remote Australian schools where geographic isolation causes a lack of opportunities for face-to-face interaction and collaboration with other learners and the wider community. Ultimately, this impacts on learning opportunities for both students and teachers.

More recently ICT tools have been developed to assist communication, sharing and collaboration. The term *Social Computing* has been coined to refer to "social behaviours supported by social software, such as email, blogs, wikis, and social bookmarking" (Wikipedia, 2008). Social computing is fast becoming an accepted norm for school-age students. In fact, by the time students reach undergraduate level as many as 85% are using social networking sites (Salaway, Caruso & Nelson, 2008).

This paper describes a project that promoted the use of social computing in remote Australian schools to enhance both student and teacher learning. The project was a collaboration between the National Centre of Science, Information and Communication Technology, and Mathematics Education for Rural and Regional Australia (SiMERR) and the SiMERR hubs that are located in each Australian state and territory. First, some relevant needs of teachers and students in remote Australian schools have been described. Second, the project is outlined. Next, some lessons learnt for educators and researchers from the learning experiences of both teachers and students

are presented. Finally, the achievements from this project are used to suggest possible ways forward in promoting the use of social computing to enhance learning in remote Australian schools.

2. REMOTE AUSTRALIAN SCHOOLS

Australia is a large country of 7.7 million km^2 with a population density of only 2.6 persons per km^2. Of the 25.5 million Australians (Australian Bureau of Statistics, 2009a), approximately 68% live in major cities (Australian Bureau of Statistics, 2008b). A further 29.2% live in regional areas. This leaves the remainder of the population spread across a large expanse of the country. These 2.3% of the population live in remote or very remote areas which impacts greatly on the services available to them.

All Australian schools have been classified into one of eight sub-categories in the MCEETYA Schools Geographic Location Classification (Lyons, Cooksey, Panizzon, Parnell & Pegg, 2006, pp. 2-3). This classification is based on population size alone for denser population groupings and on CDARIA Plus scores for more sparsely populated areas. Two of the sub-categories, 'remote areas' and 'very remote areas', comprise the category *Remote Zone*. All schools classified in the remote zone are referred to in this paper as remote schools. Most states and territories in Australia have remote schools but the largest percentages of remote schools occur in the Northern Territory, Queensland and Western Australia.

The remote geographic location of these schools means that isolation is a critical factor influencing both teacher and the student learning. Data collected in the SiMERR National Survey (Lyons et al., 2006) from 2940 Australian teachers provide some indication of how the needs of remote-school teachers differ from those of teachers in schools that are not remote. Both primary and secondary school teachers in remote schools showed greater need in most areas of professional development (Lyons et al., 2006, pp. 83-84, 89, 92, 94). In particular, the professional isolation of these teachers was apparent in their greater need for opportunities to attend conferences, and for release from teaching to collaborate. A compounding factor here is the difficulty in finding release teachers to cover the teacher workload when he or she is absent. Teachers from remote schools also indicated in most areas of "general teaching context needs to support student learning", that their needs were greater than those of their counterparts in non-remote schools (Lyons et al., 2006, pp. 117, 121, 125).

One possible solution that ICT offers to overcome this isolation is the use of social computing. Evidence shows that students in remote Australian schools are at least as good as their urban counterparts in many aspects of ICT use and are in fact more confident at undertaking high level tasks (Thomson & De Bortoli, 2007). Thus teachers should be confident in making use of social computing to assist remote students to connect outside their immediate learning environment to enhance their learning.

3. SOCIAL COMPUTING ENHANCING LEARNING IN REMOTE AUSTRALIA

The *Social Computing Enhancing Learning in Remote Australia Project*, funded by the National Centre of Science, Information and Communication Technology, and Mathematics Education for Rural and Regional Australia (SiMERR), aimed to raise the awareness of the possibilities for, and impact of, social computing on student learning. This was achieved by providing a supported professional learning opportunity for teachers to implement action learning in their own school and participate in a community of practice. Social computing was used to support both teacher professional learning and student learning. The project was implemented in 2007 in

five states: Queensland (QLD), New South Wales (NSW), South Australia (SA), Tasmania (TAS) and Western Australia (WA), in collaboration with relevant SiMERR state hubs. The SiMERR-ICT representatives at each hub acted as a critical friend for the teacher(s). Schools from both the government and private sector, and students from prep to Year 12, were involved. More information about the project is available at http://scs.une.edu.au/Web2/.

While the overall focus of the project was social computing, the teachers were given further direction for planning their in-school initiatives by choosing from four Learning Focus options:

- shared knowledge;
- creating shared understandings;
- collaborative document creation; and
- real-time communication.

Having decided on the learning focus to be adopted the teachers were supported in choosing the social computing tool(s) that best suited their students and local needs.

The teacher professional learning was supported throughout the project by email communication and videoconference sessions, supplemented by visits from critical friends. The various activities in the project aligned with seven 'events' designed to support the teachers' professional learning by fostering connections between the teachers and with university-based critical friends. Three of these events were videoconference-based: awareness raising, sharing of progress in planning student learning experiences, and sharing case studies from each school. Two separate groups of four to five teachers progressed through the first two events but then combined for the final videoconference event. The greatest single technical challenge with this project was to connect the teachers, across different states and education systems, in videoconference sessions hosted by the University of New England's (UNE) Tandberg-based professional full-screen videoconference facilities. Teachers were also exposed to social computing through the use of a wiki to allow them to develop collaborative evaluations of the project events.

The student learning was supported through the use of a variety of social computing tools. Following is an overview of the focus, students involved and nature of the activity for each school. A reference is provided to access more detail about the initiative at each school.

School 1 (QLD): *Creating shared understandings focus* – blogging and emailing allowed students (prep to Year 7) from a cluster of four remote schools to work together to learn about the environment through the use of robotics (Anderson & Cameron, 2008).

School 2 (NSW): *Creating shared understandings focus* – blogging allowed Year 1 students in a remote school to share their adventure stories with family and friends (Reading, Chape & Lance, 2008).

School 3 (SA): *Real-time communication focus* – videoconferencing and networked interactive whiteboards were used to teach senior Physics to three geographically separate campuses of a remote community school (White & Johnston, 2008).

School 4 (TAS): *Collaborative document creation focus – Phreda* (similar to GoogleGroups but with group member task allocation and interaction rules) allowed remote-school teams of Year

10 students to work on a collaborative task creating an internet search quiz (Fluck & Cruse, 2008).

School 5 (TAS): *Collaborative document creation focus – Phreda* allowed Year 9/10 students in a remote school to share messages and files (text, pictures and video) to create reports on field trips (Fluck & Nicholls, 2008).

School 6 (WA): *Creating shared understandings focus* – blogging allowed remote-community Indigenous adult learners, with low literacy levels, to improve their writing skills and communicate with stakeholders (Smith, Trinidad & Beurteaux, 2008).

School 7 (WA): *Creating shared understandings focus* – blogging allowed Year 6 students in a remote school to share book reviews with an audience wider than their immediate class (Trinidad & Turner, 2008).

The impressive diversity of initiatives undertaken and the age range of the students involved demonstrate that there are potentially unlimited possibilities for enhancing learning with social computing. At the time of the project blogging was a popular new tool and so became the tool of choice in a number of school initiatives. The following observations are based on data collected from interviews with the teachers and some of the students involved, as well as observations made by critical friends.

4. TEACHER PROFESSIONAL LEARNING

The teachers were enthusiastic about the use of social computing but most of them had not used *videoconferencing* before. The actual experiences of connecting to the videoconference events varied from school to school, but teachers believed they benefited from the use of social computing to support their professional learning (Reading, Fluck, Trinidad, Anderson, & White, 2008). The project provided the following recommendations (Reading et al., 2008) for addressing the challenges of using videoconferencing in remote areas:

- increase bandwidth to improve the connections for many-to-one;
- improve the visual quality of videoconference connections;
- reduce connectivity costs which are currently prohibitively high in remote locations;
- improve local availability of technical service for telecommunications equipment;
- open up system security for better interconnectivity between different videoconference systems;
- develop clear protocols for dealing with the unexpected, including time delays and unscheduled disconnections; and
- develop expertise with own videoconference equipment through regular practice to become more comfortable in dealing with technical issues as they arise.

There was a strong sense that teachers were encouraged by, and learnt from, colleagues both within their own school and in the other remote schools involved in the project. The use of the wiki to create a shared evaluation of project events was successful to a degree. While some teachers did access the wiki, response rates were not as high as may be expected if evaluation forms had been distributed at a face-to-face event. However, the responses that were provided did help to build-up a useful evaluation of the events. There was a clear implication that although technical issues continued to impede access, these were not seen as an impenetrable

barrier and the use of social computing had assisted in reducing the teachers' professional isolation.

5. STUDENT LEARNING

There were many benefits to student learning from using social computing but a variety of challenges were also identified. The benefits most commonly reported across the schools were that students were: more excited about learning and more motivated; worked with a wider range of peers; shared their learning with wider audiences and at home; and learnt more about technology and its potential. In fact staff at one school (School 6) were surprised that students absorbed the new technologies with such ease. The benefits identified by specific schools included: students shared ideas in joint brainstorming session (School 1); parents were more enthusiastic about student learning (School 2); students were more likely to review work (School 2); students liked the synchronous environment as it duplicated a classroom environment (School 3); students could receive timely feedback (School 4); students felt the relevance of their learning because of blog ownership (School 6); students learnt to take account of a wider range of audience (School 7); and students were more interested in sharing and comparing their work (School 7).

Amongst the greatest challenges common across the schools were technical problems including: the lack of relevant ICT tools and necessary hardware; connection issues due to student protection restrictions on internet connections; connection breakdowns; and poor quality picture and sound due to low bandwidth. Some school-specific challenges were: young students not being able to work as independently as hoped (School 2); students finding it difficult to concentrate when the teacher's voice was not synched with actions (School 3); students not being able to understand the 'rule-tool' used to manage groupwork (School 4); and students being initially reluctant and having low literacy levels (School 6). The most important enabling factors that supported both teachers and students in overcoming the challenges were: being able to tap into a larger network of schools; learning from peers and colleagues; the availability of safe, interesting, student-friendly online environments that encourage student use; and the assistance provided by teachers, parents and community members not directly involved in the project.

All concerned believe that the benefits from involvement in the project outweighed the often seemingly insurmountable challenges and the achievements of the project encourage all concerned to continue to view the use of social computing as an integral part of the learning experience for both teachers and students.

6. ACHIEVEMENTS

The many achievements in this project can be viewed from management, teacher and student perspectives. From a management perspective there were three main project achievements. First, important professional links were forged between universities and remote schools through academics becoming critical friends who visited the remote schools to support teachers. Second, remote teachers were welcomed into the ICT-in-education professional community through partial financial support to present papers at the Australian Computers in Education Conference 2008 in Canberra. Especially affirming for the teachers was the enthusiasm of other teachers from remote schools who wanted to be included in future phases of the project. Finally, some headway was made in achieving the interconnection of the myriad of videoconferencing systems across the country. However, there were still Australian states and territories where the

closed nature of their videoconferencing systems makes connection to other systems very difficult.

From a teacher perspective there were three main achievements. First, teachers were moved out of their comfort zone, learning about new ICT tools and how to use them to enhance their students' learning. Although this was a challenging experience, the teachers were enthusiastic at the final sharing videoconference when they explained their in-school initiatives to the other teachers involved. Second, teachers had the opportunity to communicate synchronously with teachers from other remote schools and much interest was shown in discussing those unique challenges that remoteness brings. This occurred twice during the planning stage and not again until the final sharing videoconference when there was intense interest shown in hearing about implementation. Finally, teachers are now connected to a broader professional base including teachers in remote schools and other like-minded educators who want to expand the use of ICT, particularly social computing, in schools.

Last, but by no means least, from a student perspective there were three main achievements. First, students in the remote schools now have a broader mix of students with whom to work, both similar-age and geographically-diverse peers. Second, students now have an expanded audience with whom to share their learning. This necessitates careful planning in the preparation of the work to be presented, as the audience may include family, friends or the wider community and is no longer simply the small group of students in their own remote school. Finally, students now have more people to provide feedback on their work. As a consequence of having an expanded audience, students are now in the position to ask for feedback from a variety of people, and they no longer have to rely on their teacher and the few students in their own remote school for comment.

7. WAY FORWARD

The significant achievements of this project for both teachers and students justify the planning of a way forward to further the use of social computing to enhance learning in remote schools. The ICT tools available to assist learning are ever changing and the possibilities for implementation in learning initiatives will continue to expand as the tools become more user-friendly. Teachers need to decide what type of learning they want to facilitate with their students, and then choose relevant social computing tools to support that learning. Teachers also need to decide on their own professional learning needs and utilize social computing as much as possible to facilitate this learning.

All the teachers who were involved in this project are keen to be part of further activities that might be offered in later phases of the social computing project. The author is now planning a second phase where teachers who have already been involved can expand their experience by: assisting other teachers to use social computing; by increasing the repertoire of social computing tools they are currently using to enhance their students' learning; or by directly collaborating with teachers at other schools to implement a joint in-school initiative.

Three important considerations should inform the next phase of this project, and any similar projects that are designed to assist teachers in remote schools make more use of social computing to enhance learning. First, the teachers need to make synchronous ICT-supported connections more often. These should be at regular intervals throughout the project allowing the teachers to benefit from both the professional conversations, especially during the implementation phase, and the increased practice with the technology. Second, the teachers should be encouraged, and supported, in collaborating with teachers in other remote schools to

design student learning experiences that provide opportunities for their students to work with students from other remote schools. This was partially achieved by the QLD school in the current project and will be offered as a possible way forward for the current cohort of teachers in the next phase of the project. Finally, more detailed research about the impact of the use of social computing on student learning needs to be undertaken. This will be incorporated in the next phase of the project by requiring that each teacher collect, and report on, data to demonstrate the nature and degree of this impact.

All educators and researchers need to acknowledge that much more should be done to better harness the power of social computing to improve the learning experiences of both teachers and students in remote Australian schools.

REFERENCES

Anderson, N., & Cameron, G. (2008). Enhancing a robotics unit with social computing tools in the Queensland outback. In *Australian Computers in Education Conference: Conference Proceedings* (pp. 18-23). Canberra, Australia: Australian Council for Computers in Education.

Australian Bureau of Statistics. (2009a). Population Clock. Retrieved 15 January 2009 from http://www.abs.gov.au/ausstats/abs%40.nsf/94713ad445ff1425ca25682000192af2/1647509ef7e25faaca2568a900154b63?OpenDocument.

Australian Bureau of Statistics. (2009b). Population Distribution. Retrieved 15 January 2009 from http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Chapter3002008

Fluck, A., & Cruse, J. (2008). Behaviour management in social computing learning environments. In *Australian Computers in Education Conference: Conference Proceedings* (pp. 120-127). Canberra, Australia: Australian Council for Computers in Education.

Fluck, A., & Nicholls, T. (2008). Who's in charge? Social computing and disputed control of school ICT environments. In *Australian Computers in Education Conference: Conference Proceedings* (pp. 128-134). Canberra, Australia: Australian Council for Computers in Education.

Lyons, T., Cooksey, R., Panizzon, D., Parnell, A., & Pegg, J. (2006). *Science, ICT and Mathematics Education in Rural and Regional Australia: The SiMERR National Survey*. University of New England, Australia: SiMERR National Centre.

Ministerial Council on Education, Employment, Training and Youth Affairs (2005). *Pedagogy strategy: Learning in an online world.* Carlton South, Victoria, Australia: MCEETYA.

Reading, C., Chape, L., & Lance, B. (2008). Joey Adventures: Year 1 students blog to Learn. In *Australian Computers in Education Conference: Conference Proceedings* (pp. 411-418). Canberra, Australia: Australian Council for Computers in Education.

Reading, C., Fluck, A., Trinidad, S., Anderson, N., & White, B. (2008). Connecting teachers in remote Australia: Challenges in realising the potential of videoconferencing. In *Australian Computers in Education Conference: Conference Proceedings* (pp. 426-433). Canberra, Australia: Australian Council for Computers in Education.

Salaway, G., Caruso, J. B., & Nelson, M. R. (2008). *The ECAR study of undergraduate students and information technology, 2008.* Boulder, Colorado: Educause. Retrieved 8 December 2008 from www.educause.edu/ecar.

Smith, M., Beurteaux, E., & Trinidad, S. (2008). Blogging in the Bush: Using social computing to enhance adult literacy in remote Western Australia. In *Australian Computers in Education Conference: Conference Proceedings* (pp. 450-458). Canberra, Australia: Australian Council for Computers in Education.

Thomson, S., & De Bortoli, L. (2007). *PISA 2003 Australia: ICT use and familiarity at school and home. ACER Research Monograph No. 62.* Camberwell, Victoria, Australia: Australian Council for Educational Research.

Trinidad, S. & Turner, D. (2008). Using social computing to enhance young children's literacy in regional Western Australia. In *Australian Computers in Education Conference: Conference Proceedings* (pp. 581-585). Canberra, Australia: Australian Council for Computers in Education.

White, B., & Johnston, S. (2008). The impact of using social computing tools to teach physics across two campuses. In *Australian Computers in Education Conference: Conference Proceedings* (pp. 626-631). Canberra, Australia: Australian Council for Computers in Education.

Wikipedia (2008). Social Computing. Retrieved 15 November 2008 from http://en.wikipedia.org/wiki/Social_computing.

QUALITY OF WORKLIFE FOR RURAL AND REMOTE TEACHERS: A MODEL OF PROTECTIVE AND RISK FACTORS

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ABSTRACT

From a longitudinal qualitative case study of 29 teachers newly appointed to rural and remote schools in Western Australia a theory and model of Quality of Worklife for Rural and Remote Teachers: Person-Environment Fit to Multiple Environments was developed. The theory identifies and synthesises the protective and risk factors associated with relocation to rural and remote schools. It posits that teachers must integrate into multiple environments: the socio-cultural community of rural Australia, the geographic location, the organisation, the workplace and a specific work role, while renegotiating familial and social relationships. By synthesising factors that impact on the quality of worklife in this way, educational systems, communities and individuals can work to minimise risk factors and maximise protective factors to enhance quality of worklife and ultimately improve the retention of teachers in rural and remote areas.

Keywords: ***Quality of worklife, teacher retention, rural schools***

1. INTRODUCTION

Appointment to a rural or remote school means, for most teachers, relocation to a different community. This decision impacts on all other elements of their lives. It is a catalyst for decision-making about: vocational aspirations; family; social relationships; personal goals; housing; and transport. Arriving in a new place, establishing a home, commencing a job (and for some, a new profession), in an organisation amongst unknown colleagues, in a culturally unfamiliar community with dislocated family and social relationships requires high levels of adaptability to negotiate a sustaining niche in all these environments. The extent to which individuals fit these environments, or integrate, influences the degree to which they achieve quality in their worklife and consequently their decisions to remain in or leave the community. The theory and model presented in this paper is developed from a longitudinal qualitative collective case study of 29 teachers newly appointed to rural and remote schools in Western Australia.

Previous research examining the experiences of rural teachers identified work place and community-based factors as significant to teacher recruitment and retention in rural and remote locations (for example, Boylan et al. 1993; Crowther et al., 1991; Duck et al, 1988; ECU, 2007; Mills & Gale, 2003; Yarrow, Herschell et al., 1999). What has been lacking is a synthesis of the factors which enables educational organizations, individuals and local communities to understand the complex interactions and take action to address issues within their realm of control. The theory and model presented in this paper attempts to do this.

2. QUALITY OF WORKLIFE AND PERSON-ENVIRONMENT FIT

The concept of quality of worklife refers to the judgements "teachers make about the extent to which their work is satisfying and meeting their needs. It reflects the overall impression that teachers have about their work" (Hart, 1994, p. 119). In the quality of worklife field, Schouteten

and de Witte (2007) identified two main research perspectives: the *conditional* approach, assuming work conditions determine employee quality of worklife and the alternative *fit* approach which examines worker's perceptions of job factors and their capacities to influence those factors. The fit perspective accounts for differences between workers' evaluations of the same job. Job characteristics and psychological states are moderated by knowledge, skills, need for growth and degree of satisfaction with the work context, contributing to motivation levels and job outcomes (Louis, 1998). This study adopted the *fit* approach recognising the significance of individual perceptions of workplace characteristics and conditions.

Voydanoff (2001) applied the concept of fit to the three domains of work, family and community, examining the interfaces where issues in a domain impact on one or more of the other domains. Voydanoff's model implies that work, family and community all occur in proximity to one physical location. Similarly, Boylan et al. (1993) identified workplace, community and family as major spheres of influence in relation to long staying teachers in rural areas. However, in the current study where teachers have relocated to rural and remote schools, a more complex interface occurs, because families may not coalesce within the same geographic environment. Workplace relocation impacts on family configurations; some teachers choose to relocate their family; others choose extended separation from families. Family relocation creates the additional dislocation of immediate family, inducing family stresses which impact on worklife. Separation from family requires development of independence, and alternative ways of interacting, supporting and fulfilling family and work responsibilities.

Further theorising led to the deconstruction of the domains of work and community, explicitly identifying other environments impacting on rural and remote teacher quality of worklife; namely, the organisation; the work-role; and the geographic location. The community environment was renamed as the socio-cultural community environment to emphasise socio-cultural attributes of rural and remote Australia relevant to imported teachers, a category increasingly employed to fill difficult to staff vacancies, with continuing teacher shortages. In this theory, the term 'integration' is used to imply that changes occur in both individuals and environments to improve fit in an "interpretive and interactive process" (Kelchtermans & Ballet, 2002, p. 106), rather than the implication that individuals must adapt to environments.

3. THE RESEARCH PROJECT

The study was conducted in the interpretivist paradigm, seeking to understand the lived experiences of participants by accessing their perspectives (Patton, 2002). A longitudinal, collective case study examined the perspectives of 29 teachers commencing employment at 17 rural or remote DET schools in WA. The study examined their experiences from appointment, following them for up to 15 months after commencement.

Data were collected from participants through: an initial questionnaire; ongoing telephone interviews, site visits and email contact. All interviews were recorded with the permission of participants and transcribed. The data were analysed using an inductive process in the initial stages and later, more emergent grounded theory approaches (Punch, 2005). Initial codes were developed from the questionnaire; others emerged from the subsequent data. Codes were collapsed into key categories from which themes developed. Case studies were constructed for each participant, then analysed collectively. The data were displayed in matrices and visual representations. From the cross-case analysis, propositions emerged to form the basis of theory development.

4. QUALITY OF WORKLIFE FOR RURAL AND REMOTE TEACHERS: PERSON-ENVIRONMENT FIT TO MULTIPLE ENVIRONMENTS

The theory, Quality of Worklife for Rural and Remote Teachers: Person-Environment Fit to Multiple Environments is presented in Figure 1. The theory posits that rural and remote teachers' quality of worklife is determined by the degree of person-environment fit to multiple work and non-work environments. The environments in which rural and remote teachers operate include: the socio-cultural community of rural Australia; the geographic location; the organisation (in this case the Department of Education and Training [DET]); the workplace (school), and a specific work-role determined through both organisational and workplace influences.

In each environment factors exist which enhance or diminish teachers' quality of worklife, affecting their ability to fit the environment. Further, relocation alters existing familial and social relationships, impacting on the ability of individuals to integrate into these environments. Drawing on resilience literature (Howard & Johnson, 2004; Kaplan, 1999; Kumpfer, 1999; Luthar, Cicchetti & Becker, 2000), protective factors, such as development of significant relationships, and personal efficacy, which individuals, organisations and communities are capable of promoting, reduce the likelihood of adverse worklife outcomes by "moderat[ing] against the effects of a stressful or risk situation so that the individual is able to adapt successfully" (Conrad & Hammen, 1993, cited in Kaplan, 1999, p. 46). Risk factors are situational or environmental conditions which increase the probability of adverse outcomes. Frequently, the existence of structures and processes are protective factors and absence of structures and processes are risk factors; however, some factors are constructed as both protective and risk factors by different individuals (Kaplan, 1999). The boundaries between these multiple environments are highly permeable; issues in one environment spillover, impacting on other environments in multi-directional ways and for this reason, non-worklife domains are relevant to rural and remote teachers' quality of worklife.

Impact of Socio-Cultural and Geographic Environment on Quality of Worklife

The quality of worklife factors associated with the national socio-cultural and geographic environment include: the fit between the cultural capital of the teacher and the location; geographic and climatic conditions; distance from other locations (regional, metropolitan and familial); community demographics; community social/cultural infrastructure (health, retail, recreational); and personal safety.

In this study, six of the 29 teachers were imported or overseas-qualified teachers who were unfamiliar with rural Australian cultural contexts, specifically behavioural norms for teacher-student interactions. Another three teachers were from interstate. However, even for urban Western Australians, appointment to rural or remote locations presented them with unfamiliar geographic and socio-cultural environments. For overseas teachers, especially from non-Anglo-Saxon backgrounds, the main socio-cultural issues were related to language, the status of teachers, and Australian school culture (Inglis & Philps, 1995; Phillips KPA, 2007). Even teachers from English speaking backgrounds experienced some difficulty with the Australian vernacular.

Participants relocated to 17 geographic sites situated between one and a half hours and 36 hours by road from the capital city, previously home to most locally appointed teachers. Over three-quarters of sites were located inland. Four sites were in regional centres and two sites in remote

indigenous communities. Distance from the metropolitan area was considered an inconvenience and a cost, rather than an insurmountable problem. Participants were concerned about travel time and costs in the event of personal traumas.

Relocation involved negotiation of unfamiliar locations. Locating simple daily services and resources presented challenges. This challenge occurred while coping with the disruption of one's home and personal effects, and sometimes while trying to cope with new house-mates or fulfilling distant family responsibilities. There was an immediate and on-going impact on teacher quality of worklife from these experiences.

Yet, in many ways, the socio-cultural community environment was perceived as a protective factor associated with rural or remote locations. The rural community lifestyle and development of interpersonal relationships were protective factors, helping to build resilience; however, visibility; active gemeinschaft communication networks (based on organic connectivity between individuals through kinship, and neighbourhood interactions); the status of teachers; absence of infrastructure (especially health and medical); and law and order concerns represented risk factors. These limitations were tolerated by participants when they experienced satisfaction in work and organisational environments.

Achieving P-E fit to the socio-cultural and geographic community presented challenges to teachers, who frequently opted for integration within their culture bubble of other teachers (Joslin, 2002) rather than the broader community. The extent to which teachers' cultural values fit with the local community impact on teacher integration and retention (Boylan & Bandy, 1994; Boylan & McSwan, 1998; Crowther, 1988). In this study, for teachers new to the national socio-cultural community and geographic environment, relationships were complex, but not the primary consideration in teachers leaving appointments.

The Organisational Environment, Work Roles and Quality of Worklife

Critical aspects of the organisational environment which serve to protect or put at risk teacher quality of worklife are: appointment and relocation processes (accuracy of information; placement pressure; and housing); the congruence of teachers skills, abilities and knowledge with work-role/s; employment policies and processes (related to permanency, transfer, clear vacancies and access to information); and workload (adequate casual and full time staffing levels).

Appointment "fatigue" (Gerard Daniels, 2007, p. 1) threatened acceptance of employment offers due to difficult, unreliable and time consuming processes of accessing accurate information about teachers' roles and housing. Teachers allocated housing experienced continuing maintenance problems and shared housing stresses. Teachers commenced in roles frequently beyond their expertise and experiences, without additional support or reduction of workload. In fact, because of residual staffing difficulties, most worked over full-time loads and additional hours out of school. Feeling time-stretched, participants were frustrated by time wasted navigating the bureaucracy to access information and instigate contract renewal processes. In the face of these difficulties, it is hardly surprising that permanent tenure was not perceived as a retention incentive by nearly half of participants.

Teachers were offered positions in rural and remote schools beyond their educational qualifications and experience, a phenomenon referred to as "out-of field teaching" (Ingersoll, 2003). In this study, the term teacher role/sector congruence is used to describe a broader

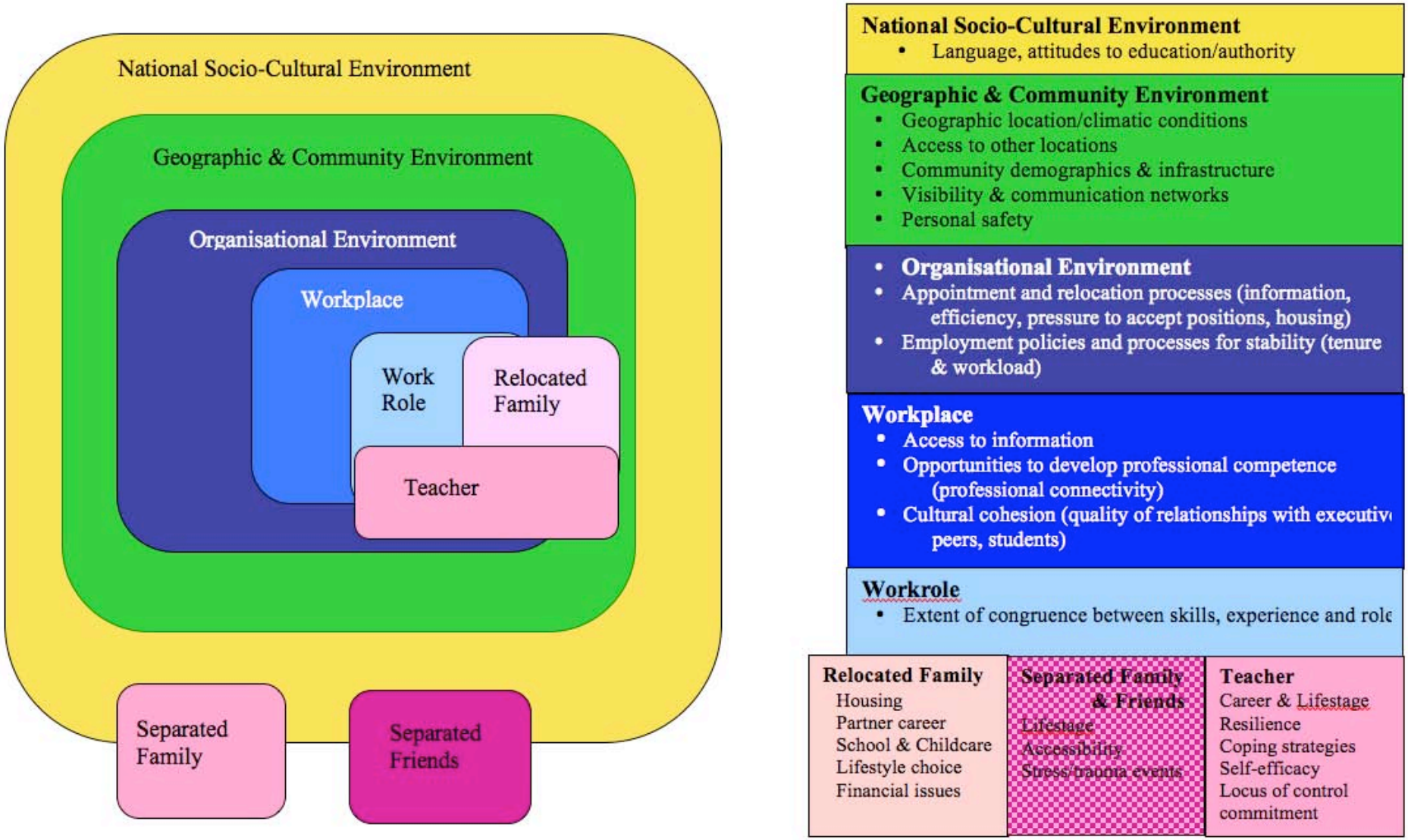

Figure 1: Model of Worklife Quality for Multiple Environments of Rural and Remote Teachers.

phenomenon of placing teachers not only outside their subject field, but also outside the educational sector for which they are qualified.

Participants were categorised as placed in positions: accurately matching their skills (role/sector congruence); not matching their skills (role or sector-displaced); or using some existing skills, while stretching their expertise (role/sector-stretched). For example, secondary educators were appointed to primary schools and tertiary educators to secondary schools. In this study, nearly half of participants were in incongruent roles and/or sectors, a greater percentage than those reported as out-of field in the US (between five and 38%) (Seastrom, Gruber, Henke, McGrath & Cohen, 2002). Half of the incongruently placed teachers left their appointment within 12 months, while only a third of matched teachers left within 12 months. The majority of unmatched teachers were novices. There is a strong link between novice teachers, role-displacement and attrition. Young novices face career commencement pressures, accepting any appointment rather than remaining unemployed.

Incongruence between qualifications/experience and role/sector contributed to dissatisfaction with quality of worklife. Participants lacked confidence in their ability to fulfil the role, felt powerless amongst their colleagues, and experienced low self-efficacy. Incongruence was exacerbated for teachers professionally disconnected and without collegial support. Most role and sector incongruent teachers accepted their appointments, knowing that to some extent, they were placed outside their preferred area of teaching; however, they felt misled, misinformed or inadequately informed about the role. Similarly, ECU (2007), Gerard Daniels (2007), and Phillips KPA (2007) reported that centralised appointment processes failed to match qualities of applicants to particular job needs, resulting in unsatisfactory placements, reducing quality of services provided and contributing to high turnover rates for teachers, and other professionals in regional areas. Placement of teachers in incongruent positions impacted negatively on self-efficacy and commitment (Hart, 1994; Louis 1998), leading to feelings of reduced competence and negatively impacting on well-being (Headey, Holstrom & Wearing, 1985), job satisfaction quality of worklife (Hart, 1994) and creating stress (Kyriacou, 2001).

Teachers in this study, who coped with incongruence, operated in school environments providing support and feedback and demonstrating confidence in their abilities. They had a desire and willingness to extend their professional knowledge, because of the "moral purpose" of their work (Howard & Johnson, 2004), believing that adaptation was achievable and both professionally and personally valuable. These teachers demonstrated resilience in adverse situations, retaining self-efficacy and strong levels of commitment. If teachers are incongruently appointed, provision of protective factors may ameliorate some dissatisfaction (Ingersoll, 2003). In this study, no additional support was given to teachers placed beyond their comfort zones, to develop the skills and competence needed to fulfil their roles/sectors. From this study, it can be concluded that incongruent role or sector placement contributes to teacher attrition, but provision of adequate protective factors within environments (Gu & Day, 2007; Howard & Johnson, 2004) may improve retention of teachers in incongruent roles.

The organisational environment was perceived as heavily risk laden - bureaucratic, inaccessible and difficult. Tromans (2002, p. 8) described teachers without permanent employment as "hav[ing] no security…very little positional power to effect change within the organisation, little control over some of their working conditions, and a limited range of

avenues to redress inequities and concerns". This accurately reflects participants' experiences of the organisational environment in this study. In cases where protective factors existed in the workplace environment some organisational risk factors were ameliorated. Hillier et al. (2005) advocate organisational intervention over individual interventions to improve the outcomes for more employees.

Workplace Environment Factors and Quality of Worklife

Workplace environment factors associated with quality of worklife include: access to information; opportunities to develop professional competence (including professional connectivity); and cultural cohesion (including quality of professional relationships with superordinates, peers and students). The rural and remote teachers' workplace environment is the school, and incorporates aspects of work-role. Work-role issues were discussed in relation to the organisational environment, because teachers are appointed to a role, in the first instance, by DET; however, the final allocation of teaching role is determined by school-based personnel. There is some permeability between environments with provision of induction, mentoring and networking occurring at workplace and organisational levels. Solutions may be implemented by stakeholders in different environments, with the permeability from one environment to the next recognised.

Protective factors enhancing quality of worklife in the workplace are: access to information; opportunities to develop professional competence (and professional connectivity); and cultural cohesion (quality of relationships with superordinates, peers and students). Risk factors inhibiting quality of worklife are professional isolation from information (lack of connectivity, performance feedback) and cultural dislocation, especially unsupportive relationships with superordinates and poor workplace communication.

The experiences of one participant epitomised workplace risk factors for rural and remote teachers. Hermione was a secondary Indonesian teacher incongruently placed in two remote primary schools, struggling to adapt to the children's level. She was not inducted into either school, not invited to welcome events, nor greeted by staff. Her requests for assistance went without response, opportunities were withdrawn and by the end of the year she had not been formally appraised. In May, Hermione spoke of "feeling very discouraged…no new teacher should ever have to experience this." She thought of "giving up lots of times" and was trying to survive till the end of her contract, stating, after this experience "I don't want to teach again". By the end of third term she was experiencing panic attacks, shortage of breath, was distraught and sought counselling. Clearly, changes to the workplace environment could have improved worklife quality for this participant: induction to workplace practices, norms and values; access to mentors or networks; and collegial relationships could have assisted development of professional competence and reduced stress. These protective factors could have assisted Hermione and others to develop a sense of control and efficacy in the workplace. The only positive workplace environment factor for Hermione was the relationship she formed with students.

This study suggests that workplace practices, controlled by school-based administrators can significantly improve teacher quality of worklife. Gray and Smith (2005) put the issue succinctly: "improving working conditions and salaries might be helpful steps toward recruiting an adequate number of teachers, but giving them chances to learn and practice their craft is the best way to retain quality teachers" (cited by Gore et al., 2006, p. 9). Factors identified in this section highlight the importance of opportunities to develop

professional competence by creating cohesive and collegial cultures focused on commitment to students. These are areas which can be fostered by school-based personnel.

Social and Familial Relationships and Quality of Work Life

Appointment to a rural and remote school reshapes familial and social relationships, requiring renegotiation of work and non-worklife interfaces, to achieve balance and quality of worklife. Teachers separating from families and friends or relocating parts of families experienced familial and social dislocation. Issues impacting on familial/social dislocation include: choice of relocation or separation; accessibility to separated family/friends; partner careers; school and childcare access; lifestyle choices; financial issues; life stage; and occurrence of stressful or traumatic family events.

Time-based and strain-based demands spilled over from work to non-worklife domains. For most, these spillovers impacted negatively on non-worklife. In more limited cases, spill-over occurred between non-worklife and worklife, particularly for those sharing housing. Couples and colleagues who shared workplaces and housing experienced the greatest difficulties achieving work/non-worklife balance. For some participants, separation from family added a time-based resource which enabled their integration. The importance of work/non-worklife balance and family friendly workforce policies is being increasingly advocated (Batt & Valcour, 2003; Berg, Kalleberg & Appelbaum, 2003; ECU, 2007; Gerard Daniels, 2007). The ability of rural and remote teachers to gain work/life balance is influenced by career and life stage (Allan, Loudoun & Peetz, 2007; Voydanoff, 2005). Rural and remote schools are increasingly staffed by people in diverse life stages, with young and mature-aged novices overly represented.

5. CONCLUSION

From a systems and environmental theory perspective (Bronfenbrenner, 1989), entry into new environments may create disequilibrium for individuals, requiring adaptation or environmental change to achieve integration (equilibrium) or fit. Processes and factors which support socialisation and acculturation of individuals into normative behaviours of environments assist successful integration. Where disequilibrium exists, individuals seek to improve fit through adaptation of self or environment, but continued disequilibrium causes alienation and isolation, leading to maladaptive behaviours, and ultimately, withdrawal from environments.

This paper has identified multiple environments which contain protective and risk factors that influence the ability of teachers to integrate and achieve a positive quality of worklife in rural and remote schools. The theory proposed in this paper provides a conceptual framework for reconciling conflicting findings from the research literature relating to the relative significance of workplace and community influences on rural teacher retention. The theory developed in this chapter provides a conceptual framework for moving beyond uni-dimensional findings to explore the complex interaction of factors that contribute to individual teachers developing vastly different perceptions of their experience and environments. By understanding the multiple environments that impact on rural and remote teachers, the interface between work and non-worklife environments and the protective and risk factors associated with each environment, it is possible to manipulate these factors to enhance the quality of worklife of all teachers newly appointed to rural and remote schools.

REFERENCES

Allan, C., Loudoun, R., & Peetz, D. (2007). "Influences on work/non-work conflict." *Journal of Sociology 43*(3): 219-239.

Batt, R., & Valcour, P. M. (2003). Human resources practices and predictors of work-family outcomes and employee turnover. *Industrial Relations 42*(2): 189-220.

Berg, P., Kalleberg, A. L., & Appelbaum, E. (2003). Balancing work and family: The role of high-commitment environments. *Industrial Relations 42*(2): 168-188.

Boylan, C., Sinclair, R., Smith, I., Squires, D., Edwards, J., Jacob, A., O'Malley, D., & Nolan, B. (1993). Retaining teachers in rural schools: Satisfaction, commitment and lifestyles. *Rural Education Issues: An Australian perspective*. C. Boylan, & Alston, M. (Eds.), Key Paper No. 3**:** 111-130.

Boylan, C., & Bandy, H. (1994). Education and training for rural teachers and professionals. Issues Affecting Rural Communities: Proceedings of an International Conference, Rural Education Research and Development Centre, Townsville, Queensland, July 10-15.

Boylan, C., & McSwan, D. (1998). "Long-staying rural teachers: Who are they?" Australian Journal of Education **42**(1): 49-65.

Bronfenbrenner, U. (1989). "Ecological systems theory." *Annals of Child Development* R. Vasta (Ed.) **6**: 187-249.

Crowther, H. (1988). Research in rural education: Problems in teacher personal and professional adjustment to remote area teaching and living. Symposium on Research in Rural Education at the Annual Conference of the Australian Association for Research in Education. University of New England.

Crowther, F., Cronk, P., King, S., & Gibson, I. (1991). "Beginning teachers in small, isolated schools: Time to question some myths?" *Education in Rural Australia 1*(2): 17-29.

Duck, G., Webb, E., Cunningham, D., & McSwan, D. (1988). Teaching in rural and isolated Queensland. Toowong, Queensland, Board of Teacher Education.

Edith Cowan University. (2007). Attraction and retention in the Western Australian Public Sector Regional Workforce. Institute for Service Professionals, ECU, Bunbury. Retrieved 19 February, 2008, from http://isp.ecu.edu.au/ispdocs/Attract_Retent.pdf

Gerard Daniels. (2007). Review of teacher recruitment practices: Final report. Perth, Department of Education and Training. Retrieved 19 February, 2008, from http://www.det.wa.edu.au/docs/DET_Teacher_Recruitment_Practices_Review.pdf

Gore, J., Williams, C., & Ladwig, J. (2006). On the place of pedagogy in the induction of early career teachers. Paper presented at the Annual Conference of Australian Association for Research in Education, Adelaide November 26-30. Retrieved 19 February, 2008, from http://www.aare.edu.au/06pap/gor06387.pdf

Gu, Q., & Day, C. (2007). "Teachers' resilience: A necessary condition for effectiveness." *Teaching and Teacher Education 23*(8): 1302-1316.

Hart, P. (1994). "Teacher quality of work life: Integrating work experiences, psychological distress and morale." *Journal of Occupational and Organizational Psychology 67*(2): 109-132.

Headey, B., Holmstrom, E., & Wearing, A. (1985). "Models of well being and ill being." *Social Indicators Research 17*(3): 211-234.

Hillier, D., Fewell, F., Cann, W., & Shepherd, V. (2005). "Wellness at work: Enhancing the quality of our working lives." *International Review of Psychiatry 17*(5): 419-431.

Howard, S., & Johnson, B. (2004). "Resilient teachers: Resisting stress and burnout." *Social Psychology of Education 7*(4): 399-420.

Ingersoll, R. M. (2003). Out-of-field teaching and the limits of teacher policy. A research report co-sponsored by Centre for the Study of Teaching and Policy and The Consortium for Policy Research in Education. Retrieved 28 February, 2008, from http://www.gse.upenn.edu/inpress/Out-of-Field%20Teaching.pdf

Inglis, C., & Philps, R. (1995). *Teachers in the sun: The impact of immigrant teachers on the labour force*. Canberra, Australian Government Publishing Service.

Joslin, P. (2002). "Teacher relocation: Reflections in the context of international schools." *Journal of Research in International Education 1*(1): 33-62.

Kaplan, H. B. (1999). Toward and understanding of resilience: A critical review of definitions and models. *Resilience and development: Positive life adaptations*. M. Glantz, & Johnson, J. (Eds.). New York, Kluwer Academic/Plenum Publishers**:** 17-83.

Kelchtermans, G., & Ballet, K. (2002). "The micropolitics of teacher induction. A narrative-biographical study on teacher socialisation." *Teaching and Teacher Education 18*(1): 105-120.

Kumpfer, K. L. (1999). Factors and processes contributing to resilience: The resilience framework. *Resilience and development: Positive life adaptations.* M. D. Glantz, & Johnson, J. L. (Eds.). New York, Kluwer**:** 179-224.

Kyriacou, C. (2001). "Teacher stress: Directions for future research." *Educational Review 53*(1): 27-35.

Louis, K. S. (1998). "Effects of teacher quality of work life in secondary schools on commitment and sense of efficacy." *School Effectiveness and School Improvement 9*(1): 1-27.

Luthar, S., Cicchetti, D., & Becker, B. (2000). "The construct of resilience: a critical evaluation and guidelines for future work." *Child Development 71*(3): 543-562.

Mills, C., & Gale, T. (2003). "Transient teachers: Mixed messages of schooling in regional Australia." *Journal of Research in Rural Education 18*(3): 145-151.

Phillips KPA. (2007). Research on career change pathways into teaching: Final report. Department of Education Science and Training. Retrieved 17 February, 2008, from http://www.dest.gov.au/sectors/school_education/publications_resources/profiles/research_on_career_change_pathways_teaching.htm

Schouteten, R. L. J., & de Witte, M. C. (2007). "Home-situation related differences in the quality of working life in the Netherlands." *Community, Work & Family 8*(4): 379-387.

Seastrom, M. M, Gruber, K. J., Henke, R., McGrath, D. J., & Cohen, B. A. (2002, Revised 2004). Qualifications of the Public School Teacher Workforce: Prevalence of Out-of-Field Teaching 1987-88 to 1999-2000. Statistical Analysis Report. National Centre for Education Statistics. Retrieved 28 February, 2008, from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2002603

Tromans, C. (2002). Temporary employment and the beginning teacher. Paper presented at the 30th Annual Australian Teacher Education Association Conference. Brisbane, Australia. Retrieved 3 March, 2008, from http://www.atea.schools.net.au/papers/2002/CarlaTromans.pdf

Voydanoff, P. (2001). "Conceptualizing community in the context of work and family." *Community, Work & Family 4*(2): 133-156.

Voydanoff, P. (2005). "Towards a conceptualization of perceived work-family fit and balance: A demands and resources approach." *Journal of Marriage and Family, 67*(4): 822-836.

Yarrow, A., Ballantyne, R., Hansford, B., Herschell, P, & Millwater, J. (1999). "Teaching in rural and remote schools: A literature review." *Teaching and Teacher Education, 15*(1): 1-13.

GETTING THEM OUT THERE: A RURAL EDUCATION FIELD TRIP

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ABSTRACT

In order to improve recruitment of teachers to rural schools, preservice teachers need opportunities to become familiar with rural education contexts, overcome anxieties promoted by negative stereotypes and build confidence in their professional and personal abilities. Traditional approaches involve rural practicums which are not feasible for many preservice teachers. The Rural Education Field Trip provides an alternative mechanism for promoting familiarity with rural schools in a cost and time effective manner. This paper describes the Rural Education Field Trip offered by The University of Western Australia, identifying the benefits perceived by a variety of stakeholders.

Keywords: ***Preservice teachers, Rural education, Rural communities***

1. INTRODUCTION

For many preservice teachers the concept of teaching in rural schools is fraught with negative stereotypes and insidious unknowns (Sharplin, 2002). Anxiety about commencing their career is compounded by fears of isolation, cultural differences and scarcity of resources. Boylan (2005) identified tertiary rural education units and rural teaching experience as fundamental strategies for effective preparation of rural teachers. The value of rural practicums, of varied formats, has been noted and advocated by a range of professions (Daniels, Van Leit, Skipper, Sanders & Rhyne, 2007; Miles, Marshall, Rolfe & Noonan, 2003; Munsch & Boylan, 2005). Penman (2005, p. 81) concluded that "short-term academic experiences in culturally diverse work places have been shown to contribute positively to personal and professional development". However, for preservice teachers with family and employment commitments, an absence of weeks or months can represent an insurmountable financial and personal cost (Halsey, 2005). Alternatively, rural internships are an option for some preservice teachers (Sharplin, 2002b).

Within the preservice teacher education programs at The University of Western Australia, students are encouraged to complete a rural education practicum through the STREP program offered by the Department of Education of Western Australia (DETWA) (Lock, 2008) or an internship in the last term of their course. However, in order to provide preservice teachers with an alternative rural teaching experience, The Graduate School of Education has successfully operated, since 1999, a Rural Education Field Trip. This six-day journey showcases a diversity of rural communities, landscapes, industries, educational institutions and forms of educational provision. The Field Trip achieves positive outcomes for a range of stakeholders: the preservice teachers; the visited schools; and more broadly, rural communities and schools.

2. THE FIELD TRIP IN CONTEXT

The Rural Education Field Trip is offered as a voluntary component of the elective unit, Rural Education in Australia, offered in the second semester of the Graduate Diploma of

Education (Secondary Education). All students complete a compulsory Aboriginal Education unit in first semester. The Field Trip is counted as one week of practicum experience and is conducted in either the first or last week of the second practicum. The unit is selected by an average of 15 students per year, some of whom elect to complete a rural practicum instead of the field trip.

In the past, between 10 and 19 students have attended the field trip, with the optimum number being 12. On occasions, Bachelor of Education students who are unable to select elective units have also attended. The students are accompanied by the unit coordinator and a bus driver/support staff. The enrolled students complete a research project and reflection on their experiences as an assessment task for the unit.

3. THE RATIONALE

The purpose of the field trip is to familiarise preservice teachers with rural education contexts, in the broadest sense. To this end, an itinerary has been shaped to expose them to a diversity of educational institutions and delivery systems and a diversity of communities supported by a variety of primary industries. The trip encompasses opportunities to enjoy the geographic diversity of rural Western Australia, to socialise with rural teachers, to experience rural community hospitality and to interact with rural students. The preservice teachers see, first hand, the resources that are available in schools and towns and the housing provided by the Department of Housing and Works. The trip provides real contexts to which they can apply and synthesise their course theory.

Because the field trip represents one week of practicum, the preservice teachers, where possible, are placed into classes, from Kindergarten to Senior Secondary, to observe, team teach and independently teach students, with an emphasis placed on the establishment of rapport with students and the creation of fun learning activities. The experience of "out of field" teaching is intended to encourage the preservice teachers to develop experience teaching out of their comfort zone and to develop attitudes of flexibility and adaptability, given that this is a frequent experience of rural teacher graduates (Rood, 2007; Sharplin, 2008). The field trip is also an opportunity to collect data for a mini-research project on a self-selected topic related to the unit sessions and readings.

While the itinerary represents quite a punishing schedule, the travel time between locations and communal meal times provide opportunities to collaboratively reflect, discuss and argue about their experiences, perceptions of locations, programmes and rethink attitudes to contentious issues. As with any "residential" experience, the preservice teachers form a strong positive rapport, similar to that experienced by teachers working and living together in rural schools.

4. THE ITINERARY

The Mid West region (see figure 1) was selected for the field trip because it offers maximum variation within an accessible distance from the Perth metropolitan region. The exact itinerary changes from year to year, depending on opportunities which arise, and in response to student feedback. The 2008 itinerary is given in table 1 with a description of the activities undertaken at each location. The itinerary encompasses visits to four communities, from inland Mount Magnet (600 km from Perth) to coastal Geraldton and agricultural communities of Mullewa and Morawa. In each location the primary activity is to teach and observe in classrooms; however a range of social and informational activities

provides students with opportunities to learn about a variety of support and ancillary services and develop an appreciation of the broader geographic, cultural and social opportunities of rural and remote living.

Figure 1. Map of the Mid West region of Western Australia

5. THE OUTCOMES

The field trip has direct and indirect outcomes for a variety of stakeholders: the preservice teachers, the schools, and more generally to rural communities and their schools. The preservice teachers complete a pre and post trip questionnaire to evaluate the trip and identify its impact on preservice teachers' attitudes to teaching in rural communities. Other feedback has been collected anecdotally and from impromptu sources (verbal comments and unsolicited correspondence).

Preservice Teachers

In 2008, 10 preservice teachers attended the rural Education Field Trip. Of these, two preservice teachers were part time students continuing their studies in 2009. Of the remaining eight students, six (75%) already have a confirmed rural placement for 2009, two of these in schools visited as part of the field trip experience and another one within the region.

Table 1. Itinerary for rural education field trip

	Place	**Description of context**	**Activity and Objective**
Sun	Travel to Austin Downs Station, 630 km	Austin Downs is a cross generational sheep station in marginal station country. It is home to Jo Jackson King and partner, parents and three primary school-aged children.	• Experience pastoral station context • Talk by station owner – an Occupational Therapist providing services to indigenous children

			• Interaction with station children who are schooled through Meekatharra School of the Air (SOTA)
Mon	Travel 80km to Mount Magnet District High School Tour of The Granites or local mine site/production facilities Meal with Mt Magnet Teachers Billeted with teachers	Mount Magnet is an inland community, supported by mining and pastoral industries. Recent closures of mines have seen a significant decline in the population. Mount Magnet DHS has a student population of 130 with 14 teachers and 3 administrators. 75% of students are indigenous.	• Introduction to the school context • Placement in classes to observe and teach • Tour of local indigenous rock art sites or local mine to appreciate the cultural/ economic context • Meal with staff at local hotel to interact with broader community • Billeted with local staff to see GROH housing and discuss their experiences or working and living in rural communities
Tues	Travel 242 km to Mullewa DHS Travel 97 km to Geraldton	Mullewa is located in a prime wheat/sheep farming community. Most pastoralists send their children to boarding school in Perth or Geraldton or the Catholic school. Mullewa DHS has a student population of 97 with an attendance rate of 50-60%. 100% indigenous students. 11 teachers and 2 administrators	• Introduction to the school context • Placement in classes to observe and teach • Talk by Graduate teacher about first year experiences
Wed	John Willcock College/ Geraldton Senior College Geraldton Residential College Mid West District Office Tour	Geraldton is a coastal regional port centre with a population of over 30,000. In addition to the two DET secondary schools there are three independent colleges. John Willcock is a Middle school (Yr 8/9). It has a laptop program for all students. Geraldton Senior is a Senior School (Yr 10-12).	• Introduction to the school context • Placement in classes to observe and teach • Visit to see Boarding facilities • Presentation by Manager of the District Office to outline support services for new graduates
Thur	Meekatharra School of the Air (located in Geraldton) Travel 180 km to Morawa Western Australian College of Agriculture	This is one of five SOTAs which provide education to geographically isolated students by online, telephone and paper-based media. This is one of five Agricultural Colleges providing education for students in Yr 10-12 in a boarding facility located on a farming complex.	• Participation in online lessons to SOTA students. Presentation about the SOTA system and tour of facilities. • Introduction to Agricultural College system, curriculum, tour of farm and resources • Tour of community. Shire presentation on the Morawa

	Community BBQ		Education Alliance • Opportunity to socialize with teachers and community members
Fri	Morawa DHS Travel 400 to Perth	Morawa is a marginal wheat/mining community with a strong community spirit. Morawa DHS has 165 students, with 23% indigenous. There are 13 staff and 3 administrators.	• Introduction to the school context • Placement in classes to observe and teach • Recess and lunchtime interaction with staff

A meta-analysis of feedback from alternate years from 2002-2008 on three key questions is presented in table 2. Complete data were not available for alternate years (2003 and 2005) and the trip was not offered in 2007. Respondents were asked in the questionnaire to elaborate how their ideas had changed, identifying what knowledge, skills and experience they had gained from the trip and how they had benefited from participation. They were asked to comment on positive and negative aspects of rural and remote teaching that they had observed during the trip. Findings relating to these questions for an early cohort are reported in Sharplin (2002).

Table 2. Meta-analysis of preservice teacher post-trip feedback in 2002, 2004, 2006 and 2008.

Year	**No. attending**	**No. of evaluations returned**	**Have your ideas changed?**		**Would you teach in a rural school next year?**				**Did this trip fulfil your expectations?**	
			Yes	**No**	**Yes**	**Unsure**	**No**	**OC***	**Yes**	**No**
2008	10	10	9	1	8		1	1	10	
2006	11	10	8	2	4	4	1		10	
2004	13	9	9		5	2	2		9	
2002	19	19	18	1	14	2	1	3	19	
Total	53	48	44	4	31	8	5	4	48	
Percentage of Returns			92%	8%	65%	16%	10%	8%	100%	

*OC – other commitments

Ninety-two percent of preservice teachers indicated that the field trip provides them with experiences that shape their understanding of rural and remote education. Respondents most frequently reported that the trip had been "an eye-opening experience". Negative expectations and fears were challenged by the trip. Most reported the formation of positive attitudes to rural teaching and stronger belief in their ability to cope with rural and remote situations. A sample of typical positive comments includes:

> *Prior to this field trip, when asked if I would ever go rural I would answer with a definite No! But now that I have had the opportunity to view the schools and lifestyles my opinion has definitely changed. (2004)*
>
> *The idea of teaching in a remote school is a lot less daunting. (2002)*
>
> *I guess it's a lot to do with fear of the unknown. Now that I have visited some rural areas they don't seem so scary. (2002)*

This experience has shown me how beneficial it is to be part of a community and how these communities function. Also becoming aware of the issues and ways for dealing with these issues has been great. (2008)

Respondents' comments identified areas of knowledge gained, such as student literacy and numeracy levels, diversity of schools and resourcing, behaviour management approaches and indigenous education strategies. Some identified the essential characteristics of the type of rural or remote location they would prefer in terms of size, geographic or climatic conditions and community attributes. A rare negative comment was: "This trip has shattered my picture of a nice country school", but despite this, the respondent indicated an intention to seek rural employment. Even the "No" response to this question indicated positive outcomes from the trip. Accompanying comments indicated that while respondents' ideas had not been changed, the trip had affirmed their existing ideas.

From the meta-analysis, 65% of preservice teachers attending the Field Trip over four years indicated they would apply for a rural or remote position as a new graduate. Of those choosing not to apply, some were continuing their studies and others had existing personal and employment commitments. All these preservice teachers indicated their interest in seeking a rural appointment at a subsequent time in their career. Overall, 73% indicated that they would like to teach in a rural school at some stage, 16 % indicated they were unsure and only 10% of respondents indicated they would not seek a rural appointment. The following comments were typical of those declining rural employment:

I don't think I could live in a small community, but I could live in [Regional Centre]. (2002)

My girlfriend would get lonely. (2006)

However, I believe a decision not to seek a rural appointment can still be perceived as a positive outcome from the Rural Education Field Trip, both for the preservice teacher and rural schools. A decision that rural or remote teaching is not a career goal for a preservice teacher may prevent acceptance of an appointment which would result in quick teacher turnover - an undesirable outcome for the individual, schools and communities.

The comments from the 2008 cohort reflect preservice teachers' positive evaluation of the experience. For all responding students, in all years, the Rural Education Field Trip has exceeded their expectations:

This trip was amazing and surpassed my expectations completely! I was expecting to experience country teaching only, but I was able to experience the entire lifestyle of being a teacher in a rural or remote area. I learnt so much over those five days.

I had decided a while ago I would like to teach in the country, but had always been concerned about the transition, distance and the expectations. I was always worried about how different the schools would be from those I had experienced in the city. Having been on this trip has made me realise I had no reason to be daunted by the idea of teaching in the country. The schools were far less intimidating than I expected, and the rewards far outweigh the concerns most teachers would have.

I have learned more in a week than in a semester of theory-based stuff. Talking to teachers in these areas was very helpful.

The trip has exceeded my expectations. I never thought kids would be so pleased to meet me and greet me in the streets.

It has been eye-opening and exciting…we began on such a positive note but we were also made aware of schools that would not be so welcoming. We experienced the Ag. School which was a completely new and amazing experience. Over all, the welcoming feelings from the small towns were inspiring.

Benefited immensely – knowledge – the diversity required to teach in a rural community. Constructive engagement with Aboriginal students. Knowledge of ALS (Aboriginal Literacy Strategy)/ transience and resilience of students.

I loved the challenges it brought and also being able to hear other' experiences has formed such a positive outlook for me in regards to teaching in rural areas.

I have a much deeper understanding of how teachers in rural towns support each other both at work and socially. Practical knowledge of the housing available and whether a 4WD is necessary are important considerations….The field trip was an excellent opportunity to observe different rural/remote towns. It was challenging but allowed you to participate in the daily lessons of the schools and prove the skills you had acquired in the Dip Ed.

The Schools

The feedback from principals, teachers and others, at all the locations visited, was very positive. The form of this feedback included oral communication during the trip, letters and emails directly to the coordinator and submitted to DETWA. The University has open invitations to return to each location and offers to assist with accommodation of students in future years. The outcomes noted by school staff include:

- professional learning for school staff from the observation of teaching approaches and strategies used by preservice teachers, particularly in specialist secondary areas;
- innovative learning experiences for school children, including access to specialist equipment (children from one school recalled the equipment that they had seen the previous year and were able to recall their learning);
- a morale boost to the school from positive interactions with other educators and
- opportunities to network and clarify understandings of curriculum developments with other educators.

Comments from school staff included:

A breath of fresh air for all of us. (Principal of Mount Magnet DHS)

Teachers all commented on how effective the lessons were and it gave them a good opportunity to observe their students and gain some valuable teaching ideas. (Principal, Mullewa DHS)

It was such a refreshing experience to interact with your students and watch them interact with our students, showcasing engaging and exciting lesson plans that has had the students here excited about school. As a teacher who graduated only two years ago, I would have

loved to have had the experience to come out to schools like ours and see what country teaching can offer new graduates. (Teacher)

Rural Communities and Rural Schools

Direct feedback from the rural community has never been formally sought as part of the Field Trip evaluation, because it was considered by the coordinator that direct impact from such a fleeting visit would be difficult to ascertain. However, anecdotal feedback has been communicated to the coordinator through unsolicited correspondence and indirect comments passed on through the schools:

It is extraordinary how long the educational results of your visits have lasted. Mt Magnet teachers have told me they have seen similar benefits to their students. Visits like yours open the eye of students to the opportunities that are available in the wider world. And they remind the grown-ups that the close connection between country and city is still there. (Jo Jackson King, Austin Downs Station)

[The preservice teacher] made a big impression…he talked about the lesson a lot. (Parent, Morawa DHS)

More generally, employment outcomes to rural schools can be seen as a positive outcome for rural communities. Employment intentions and outcomes provide an indication of the Field Trip impacting more broadly on rural teacher recruitment. The 75% rural placement outcome, to date, for the 2008 cohort indicates very positive outcomes for this year; however, direct employment outcomes are often difficult to assess because of the vagaries of the appointment process (teachers can apply for rural placements in specific locations, but be placed elsewhere). Employment intentions provide an alternative outcome measure. In 2008 90% of participants on the field trip indicated their intention to apply for employment in a rural school. Results over four years suggest that the intention to gain employment in a rural area in the future is 73%.

6. CHALLENGES?

The presentation of positive outcome data is an accurate indication of the outcomes achieved from the Rural Education Field Trip. Preservice teachers have overwhelmingly evaluated the experience as beneficial. Feedback to the question "How would you change this field trip experience?" have primarily included conflicting suggestions about small changes to the itinerary, reflecting personal preferences, the addition of more "free time", access to more information about their teaching assignments prior to the trip or "Nothing!" This feedback has informed small changes to the itinerary over the years. Of course, the fleeting nature of the interactions and the short time spent at each location create an artificial situation which may not accurately represent the experience of sustained relocation in the communities. As one respondent noted, "we ought to remember that both parties were playing the meet and greet game"; however, the limitation of the drop in drop out structure of the trip is balanced by the exposure to diversity which is not afforded to students in a single rural placement.

The greatest challenge with the field trip is that surprisingly, its value has yet to be recognised by the Department of Education through the provision of any financial support. As with many effective learning experiences, the ability to offer the trip relies on a continual search for philanthropic supporters and the generosity of school communities.

Extension of data collection in a systematic way to other stakeholders may provide further evidence of the positive outcomes.

7. CONCLUSION

The rural education field trip has been a highly successful means for exposing preservice teachers to a diversity of rural educational contexts, giving them first-hand experience of schools, students, teachers and rural communities. The trip provides them with an opportunity to become familiar with the unknown, allowing them to overcome anxieties and develop confidence in their skills and abilities as rural teachers. It provides an alternative opportunity for preservice teachers who are unable to commit to an extended absence from work or family commitments. The trip represents opportunities for preservice teachers to engage with rural and particularly indigenous students, developing their cultural awareness and understanding of rural and indigenous education issues in context. The learning that I observe in all people associated with the rural education field trip and the requests for our return make me entirely committed to the importance of this opportunity for all stakeholders.

REFERENCES

Boylan, C.R. (2005) Designing a course in rural education. In C. Boylan (Ed.), Our Stories: Innovation and Excellence in Rural Education. Proceedings of National Rural Education Conference of the Society for the Provision of Education in Rural Australia (21st, Darwin, Northern Territory, Australia, October 2005). pp 49-58. Toowoomba, Qld: SPERA.

Daniels, Z.M., Van Leit, B.J., Skipper, B.J., Sanders, M.L., & Rhyne, R.L. (2007). "Factors in recruiting and retaining health professionals for rural practice". *The Journal of Rural Health, 23*(1) 62-71. Retrieved from http://www3.interscience.wiley.com/cgi-bin/fulltext/118541293/PDFSTART

Halsey, J. (2005). Preservice country teaching in Australia. What's happening - what needs to happen? A report on the size, scope, and issues of preservice country teaching placement programs in teacher education in Australia, Rural Education Forum Australia. Retrieved 19 February, 2008, from http://www.refa.edu.au/data/portal/00004397/content/63324001129609211338.pdf

Lock, G. (2008). "Preparing Teachers for Rural Appointments: Lessons from Australia". *Rural Educator, 29*(2). pp. 24-30

Miles, R. L., Marshall, C., Rolfe, J., & Noonan, S. (2003) "The attraction and retention of professionals to regional areas." Retrieved 3 March, 2008, from http://www.bowenbasin.cqu.edu.au/pdfs/dotars_colloq.pdf

Munsch, T., & Boylan, C.R. (2005). Remote rural practice teaching. In C. Boylan (Ed.), Our Stories: Innovation and Excellence in Rural Education. Proceedings of National Rural Education Conference of the Society for the Provision of Education in Rural Australia (21st, Darwin, Northern Territory, Australia, October 2005). pp 73-80. Toowoomba, Qld: SPERA.

Penman, J. (2005). Creative teaching solutions in difficult remote practice realities. In C. Boylan (Ed.), Our Stories: Innovation and Excellence in Rural Education. Proceedings of National Rural Education Conference of the Society for the Provision of Education in Rural Australia (21st, Darwin, Northern Territory, Australia, October 2005). pp 81-88. Toowoomba, Qld: SPERA.

Rood, D. (2007, January 30). Teachers' doubt casts cloud over classroom. *The Age.* Retrieved from http://www.theage.com.au/news/national/teachers-doubt-casts-cloud-over-classrooms/2007/01/29/1169919275257.html

Sharplin, E.D. (2008). Quality of worklife for rural and remote teachers: Perspectives of novice, interstate and overseas-qualified teachers. Unpublished doctoral dissertation, The University of Western Australia.

Sharplin, E. D. (2002). "Rural retreat or outback hell: Preservice teachers' expectations of rural and remote teaching." *Issues in Educational Research, 12*(1): 49-63.

Sharplin, E. D. (2002b). Having their cake and eating it too: Preservice teachers' perspectives of internships. Paper presented at the Australian Association for Research in Education Conference. Perth, WA. Retrieved 3 March, 2008, from http://www.aare.edu.au/01pap/sha01713.htm

ENHANCING RURAL AND REGIONAL GIFTED STUDENT EXPERIENCES: EXEMPLARS OF INNOVATIVE ENRICHMENT PRACTICE

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ABSTRACT

The School of Education at the University of New England (UNE) has developed a strong reputation in the area of Gifted and Talented education that encompasses productive research projects, the teaching of undergraduate and postgraduate students, the implementation of teacher professional learning programs, and the planning and hosting of enrichment programs. Supported by funding from SiMERR NSW, an enrichment program for gifted rural and regional school students has been developed and implemented over the past two years. The authors will present in this paper, a series of vignettes to illustrate innovative enrichment practice for gifted school students. These vignettes will also example the innovative use of ICTs and the involvement of educators and parents as a united community of practice to support gifted students. The paper will conclude with the provision of a number of emerging recommendations for future practice, for enriching the teaching and learning of gifted students in rural and regional contexts.

Keywords: ***Community of practice, Enrichment programs, Gifted and Talented students, ICTs, Model of Dynamic Differentiation (MoDD)***

1. DEFINITIONS

Rural and Regional

For the purpose of this paper, rural and regional are terms used to identify areas of population within Australia based upon the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA), Schools Geographic Location Classification (MSGLC) coding guide. This classification coding as developed by Jones (2000, 2004), was used for reporting nationally comparable schooling outcomes. Building on data collected by the Australian Bureau of Statistics (ABS, 2001), the eight specific categories of the MSGLC model consider both population and accessibility/remoteness. With respect to the term region or regional, these are categorised as areas around non-remote provincial cities with populations of "25,000 or more" (Jones, 2004, p.1), while rural areas are usually associated with smaller locations with populations of less than 25,000 (Lyons, Cooksey, Panizzon, Parnell & Pegg, 2006). However, the term rural can also by association overlap with the term remote due to accessibility and remoteness factors, as determined by the Accessibility and Remoteness Index of Australia (ARIA). This index was "developed by the National Key Centre for Social Applications of Geographical Information Systems (GISCA) at the University of Adelaide" (Jones, 2000, p. v).

Gifted

The identification of gifted and talented students and the determination of their specific needs are complicated by widely different opinions of what giftedness is and how it is manifested. Research and theory on giftedness has varied, ranging from Renzulli's (1977) dependence on similarities between ability, commitment and creativity, Gardner's (1983) theory of multiple intelligences (MI), and Gagné's (2008) differentiated model of giftedness and talent. Gagné (2008) proposed that most scholars used the terms gifted and talented synonymously in their writings. However, Gagné (2008) also writes that scholars, the likes of Renzulli and Sternberg "hesitate to use the term talent, focusing their whole conception of outstanding abilities on the concept of giftedness" (p.1). Notwithstanding these scholarly debates, Gagné's Differentiated Model of Giftedness and Talent (DMGT) has become the basis for differentiating definitions of the terms gifted and talented in Australia, with giftedness representing the possession and use of outstanding natural abilities, called aptitudes, while talent designates an outstanding mastery of systematically developed abilities, called competencies. Both terminologies apply to individuals, in this case students, who are placed amongst the top 10% of their age peers in terms of at least one ability domain in the case of gifted, and in at least one field of human activity with respect to talent. Both notions of the definition share three characteristics: reference to human abilities, the targeting of individuals who differ from the norm or average and the targeting of individuals who are beyond normal because of their outstanding behaviours (Gagné, 2008).

However, most theorists and researchers agree that giftedness is dynamic, rather than static and that students' talents must be nurtured (Geake & Gross, 2008). The central component of Gagné's (in press) model indicates that developing gifts into talents requires opportunities and support, and teachers are central to the provision of educational opportunities for nurturing gifted students' talents. Educational opportunities may include differentiating the curriculum through acceleration and enrichment inside and outside the classroom, while the uniqueness of gifted students' needs can be nurtured through effective enrichment programs. Smith (2008) notes, that when enriched flexible learning experiences that involve experimentation and choice are provided to gifted students, their individual learning styles and preferences can be accommodated and enhanced.

2. INTRODUCTION

At an Australian National level, the preamble of *The Adelaide Declaration on National Goals for Schooling in the Twenty-First Century* acknowledges the capacity of all young people to learn, and the role of schooling in developing that capacity. The *Adelaide Declaration* also acknowledges the role of parents as the first educators of their children and the central role of teachers in the learning process (MCEETYA, 1999). In terms of equity, goal 3.1 from *The Adelaide Declaration* suggests, "students' outcomes should be free from the effects of negative forms of discrimination… and of differences arising from students' socio-economic background or geographic location".

With respect to the wide ranging studies, reviews and reports on the various educational issues in rural and regional Australia, these have been quite numerous and have covered a variety of perspectives (Kilpatrick, Johns, Mulford, Falk & Prescott, 2002; Salant & Waller, 1998; Lyons et al., 2006; Vinson, 2002). Nonetheless, the underlying findings from this literature clearly identified significant issues with respect to schooling in rural and regional areas, with several of these being: the need for all schools in rural and regional

areas to develop linkages with each other (Kilpatrick, et al. 2002; Smith, 2008); recognition of the costs involved for rural and regional teachers to access quality professional learning (Vinson, 2002); concerns held by parents/caregivers in their beliefs that their children are at an educational disadvantage (Lyons et al., 2006); and the lack of enrichment/extension activities for gifted and talented students that would both engage and challenge them (Lyons et al., 2006; Smith, 2008).

Thus, it was these clearly articulated issues that guided the authors as educators, to assist in the provision of equality of educational experiences for rural and regional gifted students, their teachers and parents, through a series of enrichment events that incorporated collaborative planning, teacher professional learning and the use of Information and Communication Technologies (ICTs).

3. NEEDS OF GIFTED RURAL AND REGIONAL CHILDREN

Gifted students' many characteristics suggest that they need to be sufficiently challenged in a variety of educational environments, with a variety of content, processes and outcomes. However, gifted students are an underserved student population in most educational contexts who frequently face barriers in developing their academic capabilities in regular schools (Geake & Gross, 2008; Olszewski-Kubilius, 1998, 2003; Olszewski-Kubilius & LimburgWeber, 1999; Smith, 2008). This is further evinced in rural and regional schools where distance and limited access to resources and technologies may inhibit challenging provisions for gifted students (Feldhusen, 1991, 1997; Lyons et al., 2006; Smith, 2008). Among the many identified issues for gifted students, it is often the case that they are not provided with access to enrichment programs, they feel a sense of isolation, have few or no gifted peers, and are underserved in terms of awareness of their needs. It is also the case that they are often being taught by teachers who are not suitably trained (Colangelo, Assouline, Baldus & New, 2003; De Leon, Argus-Calvo & Medina, 1997; Geake & Gross, 2008; Smith & Chan, 1998; Smith, 2008).

In terms of curriculum for gifted students, Gross (1999) argued that,

> a curriculum differentiated in level, pace and content is a valid and necessary response to the educational needs of children whose speed of learning is significantly faster than that of their age-peers, whose style of learning often differs quite radically from theirs and who, if the curriculum is not differentiated, will be required to work through material set several years below their existing level of achievement (p. 91).

Merrotsy (2002) writes that gifted students need an education that allows them to learn at a rapid pace, think faster, longer, harder, deeper, higher, more broadly, more abstractly and solve problems more expressively. Previously, a Commonwealth of Australia (2001) Senate report suggested that, "these children have special needs in the education system; for many their needs are not being met; and many suffer underachievement, boredom, frustration and psychological distress as a result" (§ 1.1). Therefore, the gifted are exceptional students for whom exceptional educational provision is required (Merrotsy, 2002; Merrotsy, Cornish, Smith & Smith, 2008). Thus, gifted students need to spend time with their like ability peers in a variety of educational contexts where they can be engaged and challenged intellectually and affectively (Merrotsy, et al. 2008; Smith, 2008; Smith & Laura, n.d.). One way of partially achieving this and to support gifted students is through effective enrichment programs, especially in rural and regional contexts.

4. EFFECTIVE ENRICHMENT PEDAGOGY

Differentiating the curriculum through whole school lateral enrichment programs that can benefit all students is commendable and often highly enjoyable, but there is a need to go further for gifted students and provide enrichment that only they need. That is, to provide teaching and learning opportunities that are designed and implemented at a level, pace, and challenge that meets their individual needs (Geake & Gross, 2008; Merrotsy, et al. 2008). Effective enrichment pedagogy begins with whole class and whole school based lateral programs or tasks, as well as providing quality pedagogy in a variety of educational contexts, such as in special groups or classes. Events with activities that enrich their curricula and that address the individual characteristics, learning styles, readiness, interests and needs of gifted students can assist gifted students' learning (Smith, 2008). Therefore, developing appropriate curricula for gifted students that is beyond the capacity of their same-age or same-class peers also entails settings outside the classroom and strategies that engage and challenge them further (Merrotsy, et al. 2008; Smith, 2008).

Feldhusen (1991, 1997) argued that as gifted students often do not have a variety of needed educational opportunities available to them in their schools, these deficiencies might be filled through the implementation of special outside-of-school enrichment programs that could foster talent development. Other researchers and educators have also asserted that through the provision of enrichment programs, gifted students can be academically challenged, in addition to being provided with opportunities to meet their intellectual peers and obtain emotional support for their high achievement from their gifted peers and mentors (Hertzog, 2003; Olszewski-Kubilius, 2005; Olszewski-Kubilius & Limburg-Weber, 2002; Smith, 2008; Smith & Laura, n.d.; VanTassel-Baska, Landau & Olszewski, 1984). It has also been suggested in the research literature that effective enrichment programs can enhance gifted students' self-confidence, self-esteem, motivation to achieve, and personal responsibility for learning (Smith, 2008).

Historically, research on events such as weekend programs for gifted students who were receiving enrichment within cluster groups, has supported the positive effects of these programs on student achievement (Rogers, 1991), and on measures of critical thinking and creativity (Rogers & Span, 1993). More recently, Smith (2008) offered the concepts of social networks and social support as important elements of the gifted program process for talent development, contending that social networks should consist of family members, community members, teachers and peers that children know, or as a result of these programs will make future contact. Smith (2008) also contends that social support, such as instrumental assistance, material support, emotional support and guidance, are also crucial to the full development of gifted students talents, particularly for special groups of students such as those in isolated rural or regional areas. Enrichment programs, like those illustrated in the vignettes below, partially support effective enrichment pedagogy for gifted students where they have the chance to meet like ability peers and have their interests and affective needs nurtured.

Gifted students' perceptions of enrichment

For gifted rural and regional NSW students, preliminary analysis of responses to survey evaluations conducted by Smith (in press) at the conclusion of several enrichment events, has suggested a strong correlation to findings from earlier studies (Moon & Feldhusen, 1994). The findings being that students' identify with the benefits of enrichment programs in terms of the development of their creative, critical, and problem-solving skills, their

increased understanding of and confidence in their abilities and the heightened enjoyment they experienced when working with new like-minded peers and new engaging teachers.

Parental perceptions of enrichment

It is quite common for parental perceptions to form the basis for decisions regarding their children's participation in enrichment programs, with empirical evidence suggesting that parental interest, encouragement, support, and high expectations have a direct impact (Olszewski-Kubilius & Yasumoto, 1995). Smith (in press) found from a preliminary analysis of participant surveys of enrichment days, that parents felt a connection with other parents of gifted children who also attended these events. This suggests that parents are making linkages with each other and are working towards the forming of parental networks. These newly formed groups may assist parents to not only draw upon the advice and expertise they might find within, but also to mount a collective advocacy response to any perceived problems that may arise in their children's schools (Olszewski-Kubilius & Seon-Young, 2004).

Smith's (in press) initial findings builds upon earlier research on enrichment programs (Moon, Feldhusen & Dillon, 1994; VanTassel-Baska, et al. 1984), where it was found that parents noted positive changes in their middle-years school aged children, and that they felt their children had enjoyed and benefited enormously from these programs both academically and socially. Moon, et al.'s (1994) multiple case studies also found that parents perceived that one of the prominent advantages of their children's participation was their children's interaction with other gifted peers and the creation of important links between home and school. These linkages have served as a conduit for interaction between parents and their gifted children in discussions on positive experiences encountered at their schools (Olszewski-Kubilius & Seon-Young, 2004).

Teacher perceptions of enrichment

McCluskey,Treffinger and Baker (2002) have suggested that

> … many teachers do not have time enough to do the things they want and know how to do… There is still a great need for educators, whatever the pressures, to take a positive attitude and feature programming for enrichment and talent development. Although acquiring the necessary pedagogical tools is critically important, effective enrichment depends in large part on the personality and attitude of the teacher. Educators must be positive, enthusiastic and committed to challenging and bringing out the talent of all their students (p. 6).

Geake and Gross (2008) also supported the need for developing teacher attitudes that are conducive to the education of gifted students. Hence, it is valuable to include the classroom teacher in any enrichment programs for their gifted students that are external to the classroom. Smith (2008) developed a Model of Dynamic Differentiation (MoDD) that encompasses a multi-dimensional and communal approach to curriculum differentiation, inclusive of enrichment within a variety of educational contexts. In support of such a view of differentiating enrichment, a communal enrichment model was developed to support parents and teachers in educating gifted students. The model involved academics training parents and teachers and providing enrichment days where parents and teachers could then practice their skills by supporting small groups of gifted students. The development of a community-based program of enrichment inclusive of all stakeholders can only serve to enrich gifted students' education by engaging and challenging students within a variety of

educational environments, with a variety of content, processes and products (Maker, 1982; Smith, 2008). Additionally, those strategies and skills acquired throughout the joint teaching and learning enrichment process can then be transferred to other teachers and students and parents when the participating stakeholders return to their own educational environment, which could be hundreds of kilometres away from the original venue where the event was held.

5. COLLABORATIVE COMMUNITY BASED PROGRAMS

The following vignettes are framed by Maker's (1982) and Smith's (2008) models, which outline differentiating the curriculum by varying *content, process* and *produc*t within different learning *environments*. They illustrate a series of community enrichment events that utilised collaborative teams and collegial implementation, which contributed to supporting the development of rural and regional middle-years students' gifts and talents. They are situated within a range of contexts and disciplines that utilised a variety of ICTs, and involved the participation of gifted students from various regional areas, school systems and stages of learning that crossed pedagogical boundaries, and were inclusive of participant evaluations of each event. The enrichment events identified below, also provided professional learning for middle-school teachers to develop the skills and strategies needed to work with small groups of gifted students. Also of note was the importance that parents placed on these enrichment events, with approximately 40% of parents travelling for more than three hours one-way by car with their children to attend.

Vignette 1: Crime Scene Investigation (CSI)

Environment

This vignette outlines CSI, which in the evening of day one involved a group of approximately 20 rural and regional teachers being assisted by a group of eight facilitators in the planning of and the establishment of 20 forensic crime scene locations in and around UNE. These established crime scenes contained a number of clues and forensic evidence that was to be examined the following day by the 100 participating gifted and talented students from Year 4 to Year 10 who were placed into groups of five and assigned to one of the crime scenes. The aims of this enrichment event were to provide gifted students with opportunities to collaboratively problem-solve with their like peers, in trying to establish the identity of the person(s) responsible for committing the crime, using a variety of skills, resources and ICTs. CSI was situated across a range of Primary and Secondary school curriculum in the Key Learning Areas (KLAs) of Science, Maths, English and the use of ICTs, culminating in the design and creation of a Web page to showcase the individual cases, investigations undertaken, methodology and conclusions as to who or whom had committed the crimes.

Content and Process

On the first evening the participating teachers underwent professional development in the content and processes that were to be employed in the running of CSI and how to facilitate mentoring the group of gifted students who were to be assigned to them. This was in terms of conducting a forensic CSI, problem-solving strategies and learning how to use the ICTs and associated equipment that was to be utilised by the students the following day.

Once assigned to their mentor teacher and prior to going to their forensic crime scene, a variety of techniques and skills were modelled for the 20 groups of five students that would assist them in their investigations. This included interviewing skills, chromatography, lip print and fibre analysis, the conducting of dental impressions, fingerprinting, handwriting analysis, footprint, shoe and tyre track analysis, clear liquid pH testing and the analysis of mystery powders. The students then visited their crime scenes and began their investigations while being scaffolded by their mentor teachers as required, who in turn were assisted by a tertiary facilitator if needed.

Over several hours the students moved from crime scene to the 'laboratories' where they could upload their digital camera images of the crime scene, access forensic science-based websites and databases, and conduct their analysis and problem-solving aided by the use of microscopes that were attached to laptop computers. The students also had access to 'interview rooms' where they could interview suspects or persons of interest to them. Once the individual groups had reached consensus as to who they believed had committed the crime, they designed and created a Web page to showcase the processes they had undertaken and to identify the criminal.

Product

CSI concluded at the end of day two with a forum and individual CSI group presentations to an audience of around 300 people, where the individual group's spokespersons outlined the crime that they had been investigating, the method of investigation which incorporated the ICTs that they had utilised, and the displaying of their Web page that named the person(s) they believed were responsible for the crime, with the associated proof in the form of digital images and substantiating information. To this end the named person then admitted their guilt if applicable, or if not, the real criminal stood up and announced their guilty plea. Parents were also provided with opportunities to socialise, network and to attend a parent forum that was conducted by one of the authors.

Vignette 2: Creative Animations (CA)

Environment

CA was a two-day event that combined the use of ICTs across the Primary and Secondary school curriculum in the KLAs of Creative and Visual Arts, Music, English and Human Society and its Environment (HSIE). CA was designed to scaffold and support rural and regional middle-years teachers and selected gifted and talented students from Year 4 to Year 10, in learning how to design and create animations using a variety of techniques and resources such as iLife Suite, iMovie, Garageband, Quicktime, digital still and video cameras and other items such as clay figures, Lego, drawings, toys and every day materials.

Participants included two facilitators, 60 students, 20 teachers and 10 Academic staff from UNE school of Education Learning and Teaching and ICT teams, and 5 UNE undergraduate students who were undertaking selected studies in gifted and talented education. Parents were welcomed at the beginning of the second day and were provided with opportunities to socialise, network and to attend a parent forum on how to help maximise their child's opportunities in the area of creative animations and their children's needs in relation to gifted and talented education. Parents returned again in the late afternoon of the second day for a combined screening and judging, and for the presentation of awards and certificates to the students, based on the creativity, imaginative use of

storylines, and the productive use of technology that they had incorporated into their small group-work created animations.

Content and Process

The first enrichment day included professional learning and scaffolding from UNE staff for the 20 attending middle-school teachers on developing grouping skills, using the identified software programs and to learn about animation and its different styles, which included stop-motion, traditional drawn and pixilation. Through this process the teachers were able to develop their ICT, problem-solving and creative skills, and to gain an understanding of gifted student teaching and learning that they could utilise upon their return to their individual rural and regional schools.

On the second day, the 60 selected gifted and talented students came to UNE to learn about animation and its different styles, and to learn how to use and incorporate the various forms of computer software and materials that had been provided for them. The 60 students, some of whom had been driven for up to eight hours with their parents to attend, were placed into small groups of three and with the assistance of the teachers who had attended the previous day's professional development, were challenged to develop new ICT skills and to learn in new ways cognitively and creatively.

Product

The end of the first day resulted in the screening of the individual and small group-work teacher-created animations that reflected the three styles that were incorporated. A reflective learning session was also conducted to further examine and discuss the pedagogy that could be incorporated into the process of learning, and the identification of the skills and strategies that would be needed to work with individual or small groups of gifted and talented students undertaking the creation of animations in a school context. CA came to a close at the end of day two, with a showcase presentation of the short animated movies for the students, their parents and extended families, numbering around 250 people in total. The animated movies were then uploaded into the public domain via UNE TalentEd website, with copies burned onto CDs and provided to the participating students to take back to their schools.

Vignette 3: Amazing Brain Day Workshop (ABDW)

Environment

The ABDW was a one-day Science based workshop targeting Year 4 to Year 10 students, with teachers from each participating school identifying and nominating gifted and talented students, according to their area of interests, strengths, creativity, ICT skills, and passion for Science. A room was set-up cabaret style with 120 students seated in working groups of six, with supervising parent(s) and teacher(s) who numbered around 60 in total. ICTs in the form of digital data projectors and screens, coupled with laptop computers enabled the participants to view a series of animated tours, medical imagery, and interactive presentations, with commentary provided by an internationally renowned educational consultant who facilitated the day.

Content and Process

By carefully dissecting real lambs' brains, students gained some valuable insights into the function and essential maintenance of their own 'grey matter'. Students learnt to locate, identify, dissect and describe at least 10 parts of the brain. They modelled brains from play-dough, discussed the function of the brain in learning, and the care of the brain through healthy patterns of eating, drinking, sleeping, studying, and recreation. With scaffolding provided by the facilitator, parents and teachers, the full-day ABDW helped students to understand the complex process of learning, and in particular to increase their sense of control over their learning performance by engaging in higher-order thinking activities, and the playing of games that demonstrated key brain processes. In terms of MI (Gardner, 1983), the students were involved in a variety of listening, reading, writing, cloze activities, movement activities, constructions and dissections, games, mind-mapping, discussions and self-assessment activities.

Product

At the end of the ABDW, the students had worked towards the following outcomes. Students: • dissected a sheep's brain; • identified how neurons work and what myelin does to axons in the brain; • examined how to grow dendrites; • examined rates of learning; • explained how the brain acquires and processes information; • understood the significance of the concepts we hold; • identified learning style strengths and weaknesses; • understood how the memory works and how it can be strengthened; • constructed a model of a neural network from play-dough and described functionality; • prioritised strategies for constructing memory and described their own learning styles and talents; • identified key elements of brain care for optimum learning; • made links between emotion, behaviour and attitude; • explored the language and processes of the emotional rooms; • explored how motivation and confidence affect learning at school; and described ways that they enjoy learning and considered an effective study session for themselves.

6. EMERGING RECOMMENDATIONS

According to the feedback from participants, this series of enrichment events has been very successful, with hundreds of participants attending from across several regions and school systems. Collaborative support that combined Higher Education (HE), cross-system educators, ICT experts and organisational groups, was a key feature of the UNE enrichment program. One of the main advantages of the program was that students from isolated communities had the opportunity to work with like-minded peers who reported that the events provided networks and encouraged them to maintain contact after the events. Additionally, involvement in the program enabled rural and regional students, parents and teachers to integrate KLA learning outcomes, be creative problem-solvers, to use a variety of ICTs and other materials to support learning outcomes in collaborative, enjoyable and authentic learning environments. Several recommendations emerged from this process and the collated evaluations, which included continuing:

1. the collaborative nature of planning and implementing the program using the UNE Enrichment Committee and associated teams;
2. to combine student enrichment programs with teacher professional learning facilitated by HE support and other experts in the field;
3. to widen access by various regions across Southern Queensland and NSW;

4. to evaluate the program using multi-participant feedback;
5. to source funding to support the administration of planning and implementation and to enable sustainability of the program;
6. to support those where distance an lack of resources inhibits provisions;
7. to use strategies that enable students, parents and teachers to return to their own educational context and share their new skills with others. This way the program aims are disseminated wider than those who participated in the actual events;
8. to publish and disseminate outcomes of the program to support others who may be considering implementing similar events.

7. CONCLUSION

In conclusion, the combination of an enrichment program with teacher professional learning that is supported by varying experts from HE and the community appears to be a worthwhile model to continue to support gifted students in rural and regional educational contexts. The UNE enrichment program enriched the pedagogy of middle-school students who otherwise would not have accessed such learning opportunities. All participants were very supportive of the program, with positive outcomes reported, such as student increased self-confidence and motivation to engage in school activities and interest in attending future enrichment events. Parents and teachers were actively involved in the events and community networks are increasing with additional programs in planning stages, for example the school holiday workshops. The vignettes illustrated innovative enrichment practice for gifted school students that crossed disciplines, KLAs, participants, school systems and regions. More research on enrichment programs may elaborate further advantages of out-of-school enrichment programs and whether skills learnt during the events translated to enrichment practice once the participants returned to their own educational context. Nonetheless, the program used a multitude of technical and personnel resources that were united within a community of practice to support gifted students. The framing of these programs on Smith's MoDD and Maker's curriculum differentiation model and the emerging recommendations may continue to support future practice for enriching the teaching and learning of gifted students in all areas but particularly in rural and regional contexts.

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REFERENCES

Australian Bureau of Statistics (2001), Statistical Geography Volume 1 Australia Standard Geographical Classification (ASGC) 2001, (Cat. No.1216.0). Retrieved August 2, 2008, from http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1216.02001?OpenDocument

Colangelo, N., Assouline, S. G., Baldus, C. M., & New, J. K. (2003). Gifted education in rural schools. In N. Colangelo & G. A. Davis (Eds.), Handbook of gifted education (pp. 572-581). Boston, MA: Allyn and Bacon

Commonwealth of Australia. (2001). Senate Employment, Workplace Relations, Small Business and Education Committee: Report on The Education of Gifted and Talented Children. Retrieved August 2, 2008, from http://www.aph.gov.au/Senate/committee/eet_ctte/completed_inquiries/199902/gifted/report/index.htm

De Leon, J., Argus-Calvo, B., & Medina, C. (1997). A Model Project for Identifying Rural Gifted and Talented Students in the Visual Arts. Rural Special Education Quarterly, 16(4), 16-23

Feldhusen, J. F. (1991). Saturday and summer programs. In N. Colangelo & G. A. Davis (Eds.), Handbook of gifted education (pp. 197-208). Boston, MA: Allyn and Bacon

Feldhusen, J. F. (1997). Secondary services, opportunities, and activities for talented youth. In N. Colangelo & G. A. Davis (Eds.), Handbook of gifted education (2nd ed.) (pp. 547-552). Boston, MA: Allyn and Bacon

Gagné, F. (2008). The differentiated model of giftedness and talent (DMGT). Keynote address at the 10th, Asia-Pacific Conference on Giftedness, Singapore: July 14-18, 2008

Gagné, F. (in press). The differentiated model of giftedness and talent (DMGT). In J. S. Renzulli, E. J. Gubbins, K. McMillen, R. D. Eckert, & C. A. Little (Eds.), Systems and models for developing programs for the gifted and talented (2nd ed.). Mansfield Center, CT: Creative Learning Press

Gardner, H. (1983). Frames of Mind: The Theory of Multiple Intelligences. New York, NY: Basic Books

Geake, J. G., & Gross, M. U. M. (2008). Teachers' negative affect toward academically gifted students: An evolutionary psychological study. The Gifted Child Quarterly, 52(3), 217-231

Gross, M. U. M. (1999). Inequity in equity: The paradox of gifted education in Australia. Australian Journal of Education, 43(1), 87-103

Hertzog, N. B. (2003). Impact of gifted programs from the students' perspectives. Gifted Child Quarterly, 47(2), 131-143

Jones, R. (2000). Development of a common definition of, and approach to data collection on the geographic location of students to be used for nationally comparable reporting of outcomes of schooling within the context of the "National Goals for Schooling in the Twenty-First Century". Report submitted to the National Education Performance Monitoring Taskforce of the Ministerial Council on Education, Employment, Training and Youth Affairs. Retrieved August 2, 2008, from http://www.mceetya.edu.au/mceetya/default.asp?id=11976

Jones, R. (2004). A technical report submitted to the Performance Measurement and Reporting Taskforce of the Ministerial Council on Education, Employment, Training and Youth Affairs Retrieved August 2, 2008, from http://www.curriculum.edu.au /verve/_resources/geolocation_questions_coding_file.pdf

Kilpatrick, S., Johns, S., Mulford, B., Falk, I., & Prescott, L. (2002). More than an education: Leadership for rural school-community partnerships. A report for the Rural Industries Research and Development Corporation. Retrieved August 2, 2008, from http://www.rirdc.gov.au/reports/HCC/02-055.pdf

Lyons, T., Cooksey, R., Panizzon, D., Parnell, A., & Pegg, J. (2006). Science, ICT and mathematics education in rural and regional Australia: Report from the SiMERR

National Survey. Canberra: Department of Education, Science and Training. Retrieved July 29, 2008, from http://www.une.edu.au/simerr/national_survey/index.html
Maker, C. J. (1982). Curriculum development for the gifted. Austin, TX: Pro-Ed
MCEETYA (1999). The Adelaide declaration on national goals for schooling in the twenty-first century. Retrieved August 2, 2008, from http://www.mceetya.edu.au/nationalgoals/natgoals.htm
McCluskey, K. W., Treffinger, D. J., & Baker, P. A. (2002). The amphitheatre model: An approach to talent recognition and development. In K. W. McCluskey, & D. J. Treffinger (Eds.), Enriching teaching and learning for talent development (pp. 1-7). Sarasota, FL: Centre for Creative Learning
Merrotsy, P. (2002). Appropriate curriculum for academically accelerated students: listening to the case studies of gifted students. Doctoral Thesis. Darwin, NT: Northern Territory University
Merrotsy, P. (2006) The Wii Gaay Project: Gifted Aboriginal Students. Paper presented at the 12th Aboriginal Studies Association Conference, Sydney, NSW: November 2-3, 2006
Merrotsy, P., Cornish, L., Smith, H., & Smith, S. (2008). Kick 'em while they're down: A response to Dr Catherine Scott. Professional Educator, 7(3), 34–37
Moon, S. M., & Feldhusen, J. F. (1994). The program for academic and creative enrichment (PACE): A follow-up study ten years later. In R. F. Subotnik & K. Arnold (Eds.), Beyond Terman: Contemporary longitudinal studies of giftedness and talent (pp. 375-400). Norwood, NJ: Ablex
Moon, S. M., Feldhusen, J. F., & Dillon, E. R. (1994). Long-term effects of an enrichment program based on the Purdue Three Stage Model. Gifted Child Quarterly, 38(1), 38-48
Olszewski-Kubilius, P. (1998). Research evidence regarding the validity and effects of talent search educational programs. *Journal of Secondary Gifted Education,* 9(3), 134-138
Olszewski-Kubilius, P. (2003). Special summer and Saturday programs for gifted students. In N. Colangelo & G. A. Davis (Eds.), *Handbook of gifted education* (3rd ed.) (pp. 219-228). Boston, MA: Allyn and Bacon
Olszewski-Kubilius, P., & Limburg-Weber, L. (1999). Options for middle school and secondary level gifted students. Journal of Secondary Gifted Education, 11(1), 4-10
Olszewski-Kubilius, P., & Limburg-Weber, L. (2002). Designs for excellence: A guide to educational program options for academically talented middle and secondary school students. Evanston, IL: The Center for Talent Development, Northwestern University
Olszewski-Kubilius, P., & Seon-Young Lee. (2004). Parent perceptions of the effects of the Saturday enrichment program on gifted students' talent development. Roeper Review, 26(3), 156-165
Olszewski-Kubilius, P., & Yasumoto, J. (1995). Factors affecting the academic choices of academically talented middle school students. Journal for the Education of the Gifted, 18(3), 298-318
Renzulli, J. S. (1977). The Enrichment Triad Model: A Guide for Developing Defensible Programs for the Gifted and Talented. Wethersfield, CT: Creative Learning Press
Rogers, K. B. (1991). The relationship of grouping practices to the education of the gifted and talented learner: Research-based decision making series. Storrs, CT: The National Research Center on the Gifted and Talented, University of Connecticut
Rogers, K. B., & Span, P. (1993). Ability grouping with gifted and talented students: Research and guidelines. In K. A. Heller, F. J. Monks, & A. H. Passow (Eds.), International handbook of research and development of giftedness and talent (pp. 585-592). New York, NY: Pergamon

Salant, P., & Waller, A. (1998). What difference do local schools make? A Literature Review and Bibliography Prepared for the Annenberg Rural Trust Policy Program. Retrieved August 3, 2008, from http://files.ruraledu.org/docs/salant.html

Smith, S. R. (2008). An ecological framework for dynamically and inclusively differentiating the curriculum. Paper presented at the One Voice International Conference, Institute of Elemental Ethics and Education, San Francisco, CA: July 5–9, 2008

Smith, S. R. (in press). Enrichment days for middle school rural and regional gifted students. Report to SiMERR NSW, November 2007-June 2008. Armidale, NSW: SiMERR

Smith, S. R., & Chan, L. (1998). The attitudes of Catholic primary school teachers towards educational provision for gifted and talented students. Australasian Journal of Gifted Education, 7(1), 29–41

Smith, S.R., & Laura, R.S. (n.d.). Repersonalizing educational ecologies to nurture the social and affective needs of gifted children. Asia-Pacific Journal of Gifted and Talented Education.

VanTassel-Baska, J., Landau, M., & Olszewski, P. (1984). The benefits of summer programming for gifted adolescents. Journal of the Education of the Gifted, 13(1), 73-82

Vinson, A. (2002). Inquiry into public education in New South Wales. Second Report, September 2002. Retrieved July 29, 2008, from http://www.pub-ed-inquiry.org

CAPTURING THEIR IMAGINATION: STRATEGIES FOR STAKEHOLDER COMMUNICATION WHEN IMPLEMENTING INNOVATION IN RURAL EDUCATION

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ABSTRACT

This paper explores the need to 'capture the imagination' of stakeholders when managing innovation and change in rural education. The paper analyses, by means of case example, the impact of conceptual models about how we learn on the acceptance of innovation in distance education. Our individual beliefs about how we gain our professional skills affect how we perceive education should be provided in rural or regional environments. This case study highlights important considerations for managing stakeholder communication. By linking stakeholder conceptual models, their vision of *what distance education is, and how professionals gain their knowledge and skills,* we can plan strategies for 'capturing their imagination' about *what distance education might be* for students of this decade. In this paper the author suggests that 'capturing the imagination' of diverse decision makers is essential when seeking approval and support for innovative curriculum initiatives in provision of distance education.

Keywords: ***conceptual change, online education, neuroscience, stakeholder communication***

1. INTRODUCTION

Have you ever been asked to "use your imagination"? I think we all have. However, under what circumstances? Generally, we perceive imagination to be in the realm of fiction and fantasy. Is imagination useful when managing the uptake of new technologies and their related pedagogies, particularly with the decision makers of accrediting organisations?

What is our imagination? What is the value of engaging imagination in decision-making? Webster's Revised Unabridged Dictionary defines imagination as: 'an act or process of forming a conscious idea or mental image of something never before wholly perceived in reality by the one forming the images …'. Langer (1989) identifies a lack of imagination as 'mindlessness'. Boleman and Deal state that a lack of imagination is "an empty chasm between dreams and reality, between noble aspirations and disappointing results" (2003:6). They identify decision-makers who believe there to be only one way that something can be done as lacking imagination and courage. Humans have the capacity to create a mental image or concept of something we may not have access to in the physical world. We use our past experience to build a new experience. The internal brain process of imagining lets us as humans bring previous sensory experiences and thoughts about those experiences, together to create new ideas and thoughts.

2. BLENDING LEARNING STRATEGIES

Revising the Bachelor of Nursing to meet the needs of the both distance education and on-campus students had taken many months to plan and develop. The program development

team had given many hours to the organization, integration and presentation of the program. They had investigated numerous strategies for blending the learning opportunities of remote learners with those students who would be on-campus. They had considered the need for many students to work while they studied part-time. They had debated the strategies amongst themselves and at length with a Review Panel of representatives of the professional and student communities. While it is not possible to meet all needs, they felt they had addressed many of the imperatives for improving the professional learning opportunities of the intended cohorts of students.

Two members of the Nurses and Midwives Program Accreditation Board had been present when the plans for using a learning management system to delivery integrated blended learning was reviewed by representatives of the professional community. At that time I had outlined the pedagogies and technological tools that would be used in program delivery. As a result of this presentation, I was asked to give the presentation again; this time for the full membership of the Program Accrediting Board. When preparing this second presentation I had carefully gone through every requirement issued by the Board and ensured that I demonstrated our compliance and vision for fulfilling these requirements. The proposal was to use blended-learning strategies for the engagement of all students, both internal and external. Blended Learning is the combination of multiple approaches to learning. It enhances traditional face-to-face learning and teaching with the use of educational technologies, combining online and on-campus approaches. Each year group would be viewed as one cohort with access to the same learning materials, assessments and equitable learning activities. These students would use the online learning management system to network with each other, share resources, and exchange ideas about the content of the course and their clinical experiences. They would collaborate in online activities if off campus; or work with their peers in face-to-face situations if on-campus. When I met with all of the members of the accrediting body, I *focused on how the blended Bachelor of Nursing would address all of the Board's requirements*. I *explained* in some depth how this would be achieved using online technologies. My purpose was to *explain* the benefits of using Information Communication Technologies in meeting the needs of the rural and remote students.

What a disappointment. Months of hard work by the Course Development Team seemed to go unrewarded. My presentation to the Accrediation Board, while recognised as informative and comprehensive did not persuade the Board members to approve the distance education program. Despite the very high regard of the Board members and their espoused understanding of the value of distance education opportunities for rural and remote students, the Board decided not to approve the presented distance education program. They stated that it was necessary for the first year students to be on campus attending lectures. It was inconceivable that these students could learn their professional skills without full-time attendance on campus in lectures and laboratories with their designated tutors. The Board stated that they had never approved such a pattern of study previously and did not believe they could do so now. The proposed study program was withdrawn in light of the Board's comments. What went wrong? Why had the presentation given to the Review Panel (including two Board members) been so enthusiastically received, yet, not move the Accreditation Board?

3. WHY NOT CHANGE? WHY NOT TRY SOMETHING DIFFERENT?

Following the presentation, it became obvious that the concepts of distance learning (mental models) of some of the Board members, did not include off-campus study. A

mental model is essentially a personal theory of how things work (Senge, 1990). Mental models are individual, but can also be shared, as in the case of organisations and special interest groups. Closer attention to orginisational learning and change management literature may have helped here. Well, maybe! Much of this literature takes a 'management, focus, adopting strategies for stakeholder identification and analysis. Such mechanisms include issue analysis, consultation, strategic communication and formal contact (Gardiner, 2005). This, we felt we had paid attention to.

While preparing the proposal to amend the delivery of the Bachelor program, the development team acknowledged that the accrediting organization would need to change some of their opinions and practices. The approvers of the delivery changes would need to look at the provision of professional learning experiences from a different perspective. In attempting to engage that change we had viewed our role as providing enough information and examples to bring about a new perspective. We focused on making logical arguments for change. Our presentations to the Board—a proposal document, static examples of online learning interfaces, and a pedagogical strategy presentation fell wide of the mark. The desired change did not eventuate.

Quinn (2000) reviews general change strategies originally offered by Chin and Benne (1969 in Quinn, 2000): (1) telling, making logical arguments for change (our strategy); (2) forcing, using leverage or threats (not practical in this situation); and (3) participating, using dialogue or win-win strategies (incorporated into the review process, but not practiced in Board presentation). To these three, Quinn offers a fourth, 'advanced change theory' (ACT) directed towards personal transformation. Each of these different change strategies is associated with differing perspectives or realities. The first two are quite widely practiced in an educational setting. Seldom is the third possible in this type of situation; and who would set out to "effectively introduce change to human systems" (Quinn, 2000:13) in a half hour Board presentation? The process of transformation is challenging. "One's values, deeply held beliefs, and attitudes are very difficult to recognize and also very difficult to change" (McGregor, 2004). Yet, as educators, daily we endeavour to engage the change process. Taylor (1998) cites many studies to support perspective transformation (conceptual change). The literature suggests that these forms of change are more powerful than critical reflection. To achieve real and lasting change, we must do more than use our cognitive skills, we must engage the affective dimension of knowing (Taylor, 1998). We must ensure that the emotions and feelings contribute to the making of meaning.

Theorists of organisational learning (Smith, 2001, Edwards, 1998, Senge 1990) are of assistance in understanding the Board's reluctance to change their existing practice by approving part-time distance learning for first year pre-registration nurses. In a comprehensive review of the contributions of Argyris and Schon, Smith (2004) links the theories of action, single- and double-loop learning and organisational learning to provide insight into bringing about change.

For Argyris and Schon learning involved the detection and correction of error (Smith 2001). Other authors also refer to the need to recognise and work actively to make changes to the perceived error (Zull, 2004; Quinn, 2000; Senge, 1990). As individual humans we build up a store of experiences to which we add, all the time. These become our collective mental models. Our learning is 'constructed' by connecting the new information or experience to pre-existing neural networks (Siegel, 1999). By doing so, we 'make meaning' and create pervasive models upon which to link additional concepts. Single-loop

learning is where we link a new experience directly to a previous concept or one that fits into an existing paradigm. In double-loop learning we may not be able to find a ready solution to the situation, and thus question the validity of an action. To resolve the issue we must 're-think' and 're-solve' thus stretching our neural networks, or building new ones. Double-loop learning requires a 're-framing' of existing concepts—thus conceptual change—an alteration to our mental models. Doing what we have always done is comforting. There is an art to assisting others to reframing their concepts of the world (Bolman and Deal, 2003). Preoccupation with details, and rationality do not capture the imagination and allow the mind to stretch and engage with change.

4. CAPTURING IMAGINATION

'Why couldn't members of the Board see the possibilities to meet the ever increasing need of rural and remote students for access to part-time and distance learning?' was a question that plagued me for days, until I heard Margaret Throsby's interview with astrophysicist, Bryan Gaensler. When asked what stimulated his interest in investigating the heavens, Professor Gaensler told the story of a book given to him by his parents at the age of five. His reply, that "it captured my imagination" led me to think of another recent discovery—James Zull's article on The Art of Changing the Brain (2004). Aha! A flash of insight! [McGregor, S. L. T. (2004) refers to the "aha" experience as a profound moment of insight.] Since the age of five, Gaensler has been on a quest that repeatedly fuels his imagination and drives him to higher levels of learning. Gaensler now admits that the book is no longer accurate in terms of astronomy, but he still has a strong attachment to it. It was the foundation for exploring the heavens more closely, and creating the new knowledge which now makes the old redundant. With a 'fired-up' imagination, Gaensler has been on a steady journey of reframing his views on astronomy. He re-fuels his imagination each time he looks at the heavens. He becomes "awe-struck".

While in the first version of my presentation about online learning, I had captured the imagination of the two visiting Board members, during the second presentation I had failed to capture the imagination of the full complement of Board members. The documentation and formal presentation had failed to engage each individual in a conceptual change conversation. Our proposed changes, presented in a detailed and lengthy proposal document, supplemented by another thick document of sample units of study, and my 'here's how we meet the criteria' presentation', failed to tap into the emotional framework of each and every panel member. The focus of each of the presentation strategies was of one of *explanation*—an unsuccessful strategy.

Donald Schon defines two forms of reflection. 'Reflection-in action' is equated to 'thinking on our feet'. We actively reflect while doing. Whereas, 'reflection-on action' is performed after the event. We may discuss, re-think, or 'think things through' to plan a new strategy or action. (Smith, Mark J. 2001). On-reflection, our mission had been to generate a learning process with Board members—a process that would capture their imagination and support the reframing of mental models. As the presenter teaching about online learning strategies, I needed to 'grow' each Board member's neuronal networks and expand their existing mental images of how professionals learn their skills. If the new form of the Bachelor of Nursing was to be approved, I needed every decision-makers' emotional buy-in. I needed to capture their imagination so that they might learn about online strategies, thereby achieving a conceptual change. James Zull, Professor of Biology at Case University, states: "When we learn, we change. We do something new or better, or we may stop doing something. Learning makes a difference." (Zull, 2004:68)

5. STAKEHOLDER LEARNING

Collectively, these Board members represent the professional accreditation organisation. As representatives of the professional association, they are stakeholders of the degree program. As stakeholders, they distinguish themselves by having a different set of assumptions regarding distance education. (Bronn and Bronn, 2003) In this situation, their beliefs are based on traditional learning strategies. Their interests may be positively or negatively affected as a result of the approval to allow diverging learning programs. To gain support and approval it was vital to manage the perceptions and expectations of these stakeholders. As the group seeking approval, we needed to ensure their thoughts, feelings, and attitudes became aligned with our perceptions. It was imperative to draw together the conceptual models of each stakeholder and to create learning opportunities promoting acceptance of distance learning concepts. My role in the process was to align their mental models of learning with technology-supported distance learning concepts.

Implementing double-loop learning

Zull links experiments from neurological research to learning, identifying two elements of learning—practice and emotion. "Neurons, or the cells of the brain, possess biochemical pathways that make them grow and reach out to other neurons whenever they are active. … To create and change this buzzing network, we need more than just activity—we need emotion. … When our network connections are awash with emotion chemicals, synapse strength is modified and the responsiveness of neuron networks can be dramatically changed. (Brembs, Lorenzetti, Peys, Baxter & Byrne, 2000). (in Zull, 2004:69)

Zull warns against *explaining*; as do McGregor (2004) and Taylor (2006). In Zull's own teaching he has changed his strategies recognising that *explaining* "negates the emotion needed for changing the brain." (Zull, 2004:70). Positive emotions are linked to learner ownership and the pleasure centres deep within the brain. When our imagination has been captured we willingly learn or change our conceptual model to line up with the vision created. In order to capture the imagination, one might need to know what the stakeholders are thinking, and the way it is understood (Kierkegaard, cited in Taylor, 2006). Yet, is this possible? Can a person understand the lifelong learning of another, especially if they have not met, or had any personal interactions previously? What can a presenter do to create double-loop learning with stakeholders?

In his 1981 PHD dissertation, Cochrane observed, "it is in and through the disclosure of one's self to another that meaning develops and is enhanced." (p.114 cited in Taylor, 1998:36). I had noted that the presentation to the Review Panel *had* captured the participants' imagination. During that presentation, I had disclosed to the Review Panel why I had become a strong proponent of online learning, relating some of my previous experiences in an international online learning group. In this disclosure I had been able to share a passionate understanding of how online personalities are detected. Using personal narrative, I had conveyed a 'feel' for what one can experience in an online learning environment. I drew upon the personal experiences of participants in the group and used metaphor and story-telling to link concepts of technology supported learning to their mental models of learning. Unfortunately, such extensive use of these strategies was not part of the Accreditation Board presentation. "This combination of a goal-oriented and linear story-line, with verbal and nonverbal expressions of emotion activates and utilizes processing of both left and right hemispheres, as well as cortical and subcortical processing. This simultaneous activation may be what is required for wiring and rewiring

through the simultaneous or alternative activation of feelings, thoughts, behaviours and sensations." Cozolino, 2002:169-170 in Taylor, 2006).

Engagement of the neural networks is based on prior experiences to which we can connect new information. A variety of strategies are feasible to achieve these connections, yet they are based on the sharing of experiences and the transfer of knowledge embedded in positive emotion and pleasant relationships. Narratives (story-telling) allow us to combine—in conscious memory—our knowledge, sensations, feeling, and behaviours supporting underlying neural network integration" (Cozolino, 2002: 292 in Taylor 2006).

6. CONCLUSION

During the first presentation, I had captured the listeners' imaginations. During the second presentation, I had reasoned that it was more important to give a rational argument rather than tell my story. We are prisoners of our knowledge based on pre-experience if we do not engage the imagination. The imagination, the ability to build new networks and mental images is enhanced by emotion; by telling a story and creating a new picture of things that had not been connected previously. Had I understood the connection between mental models and building neural networks prior to meeting with the degree program approval committee, I may have planned a different style of presentation. At least, had I been more open to sharing my own passion for online distance education and not concentrated on providing the rational, academic approach by *explaining* the benefits of technology-supported distance education, we may have achieved our goal. Conveying the vision of integrated and care-based learning opportunities for part-time distance students is important. However, more important is building that emotive connection with the decision-makers so that they too can see the vision and develop a state of excitement about the possibilities.

When we have an "aha" experience, we 'transform' our conceptual model. It is changed in such a way that we cannot believe that we thought any differently. We attach a new meaning to old data. My 'aha' experience has created a 'transformation' and new neural pathways, so that when next I engage with decision-makers, I will be far more confident and focused in making explicit my vision and excitement of how part-time distance education students can benefit equally as well as full-time on-campus students. Telling the personal story, allows others to be involved and to help develop a vision that is both individual and shared where we all learn from the process.

REFERENCES

Bolman, L. G., & Deal, T. E. (2003). *Reframing Organizations: Artistry, Choice, and Leadership* (3rd ed., p. 512). Jossey-Bass.

Bronn, P.S. & Bronn, C., 2003. A reflective stakeholder approach: Co-orientation as a basis for communication learning. *Journal of Communication Management, 7*(4), 291-304.

Gaensler, Bryan, 2008. Mornings with Margaret Throsby. Available at: http://www.abc.net.au/classic/podcasts/feeds/mti.xml [Accessed September 13, 2008].

imagination. (n.d.). Webster's Revised Unabridged Dictionary. Retrieved September 13, 2008, from Dictionary.com website: http://dictionary.reference.com/browse/imagination

Langer, E.J., 1998. *The Power Of Mindful Learning* 1st ed., Da Capo Press.

McGregor, S.L.T., 2004. Transformative Learning: We Teach Who We Are. Kappa Omicron Nu FORUM, Vol. 14, No. 2. Kapa Omicron Nu, 14(2). Available at:

http://www.kon.org/archives/forum/14-2/forum14-2_article4.html [Accessed September 13, 2008].
Senge, P.M., 1990. *The Fifth Discipline: The Art & Practice of the Learning Organization* 1st ed., Doubleday Business.
Siegel, D., 1999. *The Developing Mind: Toward a Neurobiology of Interpersonal Experience* 1st ed., Guilford Publications, Inc. Available at: http://www.une.eblib.com.au.ezproxy.une.edu.au/EBLWeb/patron/ [Accessed September 14, 2008].
Smith, M.J., 2001. Donald Schon (Schön) - learning, reflection and change. the encyclopedia of informal education. Available at: http://www.infed.org/thinkers/et-schon.htm [Accessed September 13, 2008].
Taylor, E.W., 1998. The Role of Cognitive Development in Mezirow's Transformational Learning Theory . *Adult Education Quarterly, 55*(1), 90.
Taylor, K., 2006. Brain function and adult learning: Implications for practice. *New Directions for Adult and Continuing Education, 2006*(110), 71-85.
Zull, J.E., 2004. The Art of Changing the Brain. *Educational Leadership, 62*(1), 68-72.

BUILDING SUSTAINABLE EDUCATION IN SCIENCE, MATHEMATICS AND TECHNOLOGY EDUCATION IN WESTERN AUSTRALIA

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ABSTRACT

This paper describes three case studies that were part of the *Australian School Innovation in Science, Technology and Mathematics (ASISTM)* project supported by the Australian Government to foster innovation in schools and develop the innovative capacities of students, by promoting teaching that engages students in science, mathematics and technology. Data were collected and analysed to demonstrate the effects that such projects have on student and teachers in the city, regional and remote Western Australia. Building sustainable educational solutions in science, mathematics and technology is a critical part of ASISTM project initiatives and need to be supported. The ASISTM project model provides a support mechanism to encourage schools to develop collaborative partnerships with other educational institutions, organisations and the wider community to bring 'real life' learning into the classroom. It also has the opportunity to promote the teaching profession to school students and Teacher Associates who work on these projects.

Keywords: ***Sustainable education, science and mathematics, technology***

1. INTRODUCTION

A critical part of the Australian Government *Boosting Innovation, Science, Technology and Mathematics Teaching (BISTMT)* initiative has been to provide, over the seven-year period of the Australian School Innovation in Science, Technology and Mathematics (ASISTM) project, $33.7 million in funding to cluster initiatives throughout Australia. To date over 350 innovative ASISTM projects have been funded through this initiative see website http://www.asistm.edu.au/asistm/ . These school based projects focus on improving teaching and learning in schools in the areas of science, technology and mathematics. A successful model has been developed where ASISTM projects are collaborative partnerships between schools and non-school organisations, including universities, business, education organisations and community groups (see Figure 1).

Each ASISTM project had a Project Coordinator, who on behalf of a cluster of schools and non-school organisations, managed the project which was a collaboration between schools and non-school organisations capable of contributing expertise or resources to their project such as in the case studies documented here:

- the tertiary education institution Curtin University of Technology;
- science, technology and mathematics organisations and Government environmental organisations;
- teacher and principal professional organisations; and
- industry and the broader community.

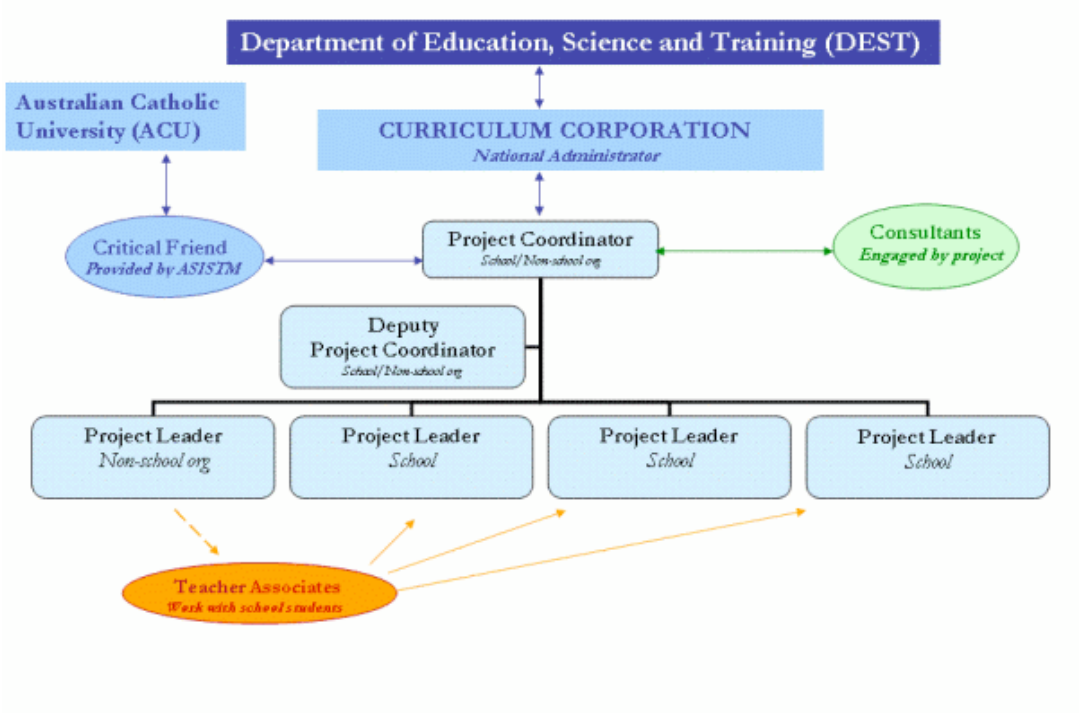

Figure 1: The ASISTM Model

All case studies documented here were schools facing special challenges, for example regional and remote schools, or schools with high proportions of Indigenous or disadvantaged students.

The School Leaders and the Teacher Associates were an integral part of the ASISTM projects. The Teacher Associate was engaged to work with students acting as a role model and helping the teachers to inspire and motivate students by bringing their 'real-life' experiences into the classroom. Their subject-related knowledge was able to help inform and shape students' science, technology and mathematics learning experiences providing examples of how relevant learning can relate to a wider context beyond the classroom. Critical Friends mentored and guided the Project Coordinators and provided valuable evaluation data on each ASISTM project.

Such additional strategic funding and the structural support provided through the ASISTM model is critical for Australian schools to succeed in supporting future science, mathematics and technology teaching and learning. With the absence of funding many of these learning experiences in schools are not possible such as providing Teacher Associates and excursions. Such expertise and extra curricula activities are not those that many schools can support or sustain in every day practice (Davies, 2006; Tyler, 2007; Tytler & Symington, 2006).

2. THE CASE STUDIES

The ASISTM funding supported three Western Australian school-based projects described here each with a Project Coordinator (n=3); a Critical Friend (n=3); School Leaders (n= 17); teachers (n= 24); students (n = 315); Teacher Associates (n= 21); consultants (n=10) and partner organisations (n= 9). Each case study was set up to support over 12 to18 months science, mathematics and technology teaching and learning.

Case Study One

The project Sustainability in Education: Building Long Term Solutions for Seven Western Australian Schools aimed to enhance the teaching and learning of science, technology and mathematics through a focus on environmental awareness and sustainability. Through adopting an 'advocacy in action' approach in which students participated in environmental advocacy events linked to science, technology and mathematics, school-designed curricula were developed through integration across learning areas and through connections to local environmental sustainability issues. Teachers from a cluster of seven schools worked with Curtin University students, lecturers and consultants from Government environmental agencies to develop curricula that embed skills, knowledge and values related to 'sustainability'.

Project Activities

- Each school developed and participated in an 'advocacy in action' project;
- Schools produced case study resources and online materials;
- Use of Teacher Associates including an Engineer, an Architect and an Environmental Scientist to bring real life examples into the classroom; and
- Professional development was provided for teachers within cluster schools, rural schools and other schools through the outcomes of the project.

The schools presented their projects to the science community in Perth in July 2007 at the *World Conference on Science and Technology Education: Sustainable, Responsible, Global*. The school projects included: examining a daily 'environmental footprint' to promote sustainable practices in water, energy, pollution and recycling; examining the effects of air pollution and the use of alternative energy sources; developing a portable water quality testing 'suitcase' of scientific materials; developing healthier living through mind, body and spiritual aspects of environmental awareness; reducing school waste; inventing products and processes to solve particular environmental problems; and developing online materials and resources for sustainability themes.

Case Study Two

The project *Plants for People Multimedia Pilot Project – A New Paradigm* aimed to enhance the teaching and learning of science, technology and mathematics through a focus on the traditional knowledge of plants, ecological systems and natural resilience that are emphasised in Indigenous communities. Thus, while aiming to improve science, mathematics and ICT learning outcomes for Years 6-9 students, the project also aimed to foster a greater understanding and valuing of Indigenous culture, and increased self-esteem and cultural pride for Indigenous students. Five schools that represented regional as well as remote locations within Western Australia participated in the project. All the schools had high enrolments of Indigenous students. A network of Indigenous and non-Indigenous Teacher Associates assisted teachers.

Project Activities

- The Indigenous and non-Indigenous Teacher Associates assisted teachers from the schools to design multimedia learning activities to develop knowledge and understandings about Indigenous sustainability principles and practices;

- Development of CD materials for lessons on building a school Noongar Garden based on the Noongar six seasons;
- A literature survey of Noongar plant uses was developed as part of the CD resource; and
- Professional development for the teachers involved, to support them in their implementation of the teaching materials.

Case Study Three

The project TSTV – Travelling Science Television aimed to enhance the teaching and learning of science supported by technology through the use of the Primary Connections – Linking Science with Literacy Project (*http://www.science.org.au/primaryconnections/index.htm*). Primary Connections provides a comprehensive approach to the development of scientific literacy and aims to improve students' learning outcomes in both science and literacy. This was achieved through an integrated professional learning program and supporting rich curriculum resources that enhance teachers' confidence and competence for science teaching. Five Catholic Education schools (three in regional and remote locations and two in the Perth metropolitan area), CEO teachers and consultants, and Curtin University pre-service teachers as the Teacher Associates.

Project Activities

- The teachers participated in professional development activities to learn about social constructivism and use the ***Primary Connections – Linking Science with Literacy*** resource materials;
- The students from each school produced an audio-visual show that demonstrated discoveries from their science classes;
- Schools used *MyInternet* and the *Centra 7* video conferencing systems to communicate their exciting science discoveries and create and explain local science via their 'TV' show; and
- Communication during the project was between the students, teachers and Teacher Associates at the university (pre-service teachers) via video conferencing and other electronic means, further extended the use and capabilities of using technology in the classrooms.

The five schools produced programs of work and used technology to showcase their quality primary science teaching and curriculum units. This audio visual production was made available online for each contributing school to use, as well as for other schools participating in the *Primary Connections – Linking Science with Literacy Project*.

3. METHODOLOGY

Qualitative and quantitative data were gathered from each of the case study schools in the form of a student survey evaluating science, maths and technology for the Year 5-6; Year 7-9 and Year 10-12 students involved in the projects; and interviews were conducted with the teachers to answer the research objectives:

1. What were the students' perceptions of maths, science and technology classes, teaching and learning; and

2. Did the ASISTM project help teacher's improve maths, science and technology teaching?

4. FINDINGS AND DISCUSSION

The results from the survey and interview data are discussed with the outcomes provided for each case study. Table 1 provides the demographics of the case studies. Of the 315 students surveyed, 48% were female and 52 % were male with the majority of students (68.9%) studying in Year 7 (118) and Year 6 (99). Of the student cohort 11% (33) were aboriginal and four students were Torres Strait Islanders.

Table 1: Demographic Information of Case Studies (n=315)

GENDER

	n	%
Male	152	48
Female	163	52

ARE YOU ABORIGINAL OR TORRES STRAIT ISLANDER PERSON?

	n	%
No	278	88
Yes, Aboriginal	33	11
Yes, Torres Strait Islander	4	1

YEAR LEVEL

	n	%
5	45	14.3
6	99	31.4
7	118	37.5
8	26	8.3
9	0	0.0
10	1	0.3
11	19	6.0
12	7	2.2

Table 2 presents the survey questions given to 315 students participating in the case studies to answer "*What were the students' perceptions of maths, science and technology classes, teaching and learning*?" Students were asked to rate 12 questions to assess their perceptions of maths, science and technology. The majority of students enjoyed their classes and the learning of maths, science and technology and believed that it was important for them to do well in maths, science and technology.

Three additional questions were asked of the Year 7 to 12 students (n=278). Over half of the Year 7-12 students felt the maths, science and technology that they were learning would be useful when they left school and they looked forward to studying maths, science and technology next year. Not as many students felt they would like a job involving maths, science and technology with in fact 22% rating they did not want a job in this area. Of the 171 Year 7-12 students, 23% rated their aspirations of becoming a teacher and of those 39 students only 18 would like to become a teacher of maths, science and technology see Table 3.

Table 2: Perceptions of Mathematics, Science and Technology (n= 315)

	SA %	A %	D %	SD %
I'm encouraged to try new ways of thinking and doing things at school	36	61	1	2
My school is a place where there are lots of new ideas and activities happening	51	44	4	0
My Mathematics, Science and Technology teacher(s) show(s) me new ways of looking at and doing things	40	55	4	1
In my Mathematics, Science and Technology classes we often decide on our own ways to solve problems	23	61	14	2
In my Mathematics, Science and Technology classes we are encouraged to ask lots of questions	33	50	15	2
In my Mathematics, Science and Technology classes we relate what we are learning to everyday life	30	57	12	1
I enjoy what we do in Maths, Science & Technology classes	54	37	6	3
I enjoy giving things a go in Mathematics, Science and Technology, even if I don't know if they will work	53	40	6	2
I enjoy coming up with new ways of doing things in Maths, Science & Technology	43	45	9	3
It's important to do well in Maths, Science & Technology	65	31	3	1
Maths, Science & Technology are useful in real life	67	29	3	1
I usually do well in Maths, Science & Technology	32	55	10	3
Extra Questions asked of Year 7-12 students (n= 278)				
The Mathematics, Science and Technology I am learning will be useful to me when I leave school	34	26	2	0
I look forward to studying Maths, Science & Technology next year	19	32	9	1
I would like a job that involves using Maths, Science & Technology	15	24	15	7

Table 3: Teacher Aspirations for Years 7-12 Students (n= 171)

I WOULD LIKE TO BE A TEACHER

	n	%
Yes	39	23
No	132	77

IF YES, I WOULD LIKE TO BE A TEACHER OF MATHS, SCIENCE & TECHNOLOGY

	n	%
Yes	18	46
No	21	54

Case Study One Project Outcomes

The project *Sustainability in Education: Building Long Term Solutions for Seven Western Australian Schools* aimed to bring about real improvements to the teaching and learning of science, technology and mathematics in Western Australian schools. As a part of Round 2 funding the group of seven schools came together and developed seven 'advocacy in

action' sustainability case studies. As the title of the project suggests the aim was to build long term solutions for the seven schools. All seven schools have been able to build and refine ideas from each other's 'advocacy in action' projects and have developed their own sets of resources and materials as a result of this ASISTM project. Each school expressed an ongoing commitment to the "sustainability in education" theme and that they will continue to use the materials and project ideas in the coming years as a part of the Western Australian Education for Sustainability (EfS) project.

This project has enabled a set of teaching resources in the form of seven case studies to be developed for schools, and for students to have the opportunity to work with an Engineer, an Architect and an Environmental Scientist, thus increasing their interest in science and technology related careers. The Environmental Science, Engineer and Architect Teacher Associates were able to talk about sustainability from a career perspective, further inspiring students in science and mathematics and how important these are and to think about further study options. This was particularly important for the Aboriginal students who had not considered Environmental Science as a career. It was observed that many students had not even heard of an Environmental Scientist before, and due to this project they were talking about becoming Environmental Scientists.

Case Study Two Project Outcomes

The project *Plants for People Multimedia Pilot Project – A New Paradigm* enabled the support and production of resources for teachers and students in regional and remote Western Australia. The CD produced allows teachers and students to better understand and develop knowledge and understandings about Indigenous sustainability principles and practices. The activities supported student learning of science and mathematics through technology including: creating a garden based on the six Noongar seasons; collecting wattle seeds and making wattle seed bread; using plants to dye silk; a field trip to a local dam to learn about Noongar culture; and using plants for medicinal purposes. The impact of the project has been to foster a greater understanding and valuing of Indigenous culture. At the same time increased self-esteem and cultural pride have been engendered in Indigenous students as well as produce a set of valuable resources.

Case Study Three Project Outcomes

The project *TSTV - Travelling Science Television* enabled students and staff at five geographically separated primary schools to participate in regular video conferencing sessions that allowed the development of a collaborative network for students, teachers, and pre-service teachers. Outcomes of the project have included increased knowledge about constructivist learning, increased use of video conferencing for collaboration, and the development of a collaborative network of regional primary science teachers (see website http://www.cswan.wa.edu.au/home/tstv/). The virtual private network (VPN) of the Catholic Education Office in WA was used in this project, providing an exemplar model for using the network, but also linking regional and city schools through a common topic of science. This project has illustrated that communications via online technologies can be successfully used for promoting learning between regional and remote schools. Using the *Primary Connections – Linking Science with Literacy* resources as a context allowed teachers and students to develop then showcase their completed Science units of work in the form of a video based TV show.

Teachers were very positive about the opportunities the ASISTM projects allowing them to participate in maths, science and technology activities with the additional funding, support and professional learning. The success of these projects is summed up by comments made by School Leaders:

"I am so glad I did this as I never wanted to do science before...now I love doing science with my class".

"The integrating of technology was very successful. Using the Interactive Whiteboards with the computers was very effective. The project had a huge impact on the way I teach science and how I feel about teaching science. It has really opened my eyes to the possibilities; it used to be a learning area that I was afraid of teaching. The opportunity to collaborate with my colleagues about the project was great, three heads together was brilliant. One teacher was strong in science and literacy, another was strong in maths and technology. We all brought something to the table."

"This is a low socio-economic area so the funding to buy the resources we needed in the project was appreciated. Also parents cannot afford the expense of excursions, but this project allowed us to take the kids on excursions and gave us valuable opportunities to bring people in"

"We got a lot out of the opportunity to establish links with professionals in that field. The scientists that came to the school were relevant to the field, and that was valuable."

5. CONCLUSION

While these ASISTM projects have had diversity in their foci and locations, there have been similarities in their outcomes, including: development of valuable resources for teachers and students; the sharing of successful learning activities for students in science, mathematics and technology; increased participation by teachers in their own professional learning; and the development of professional networks drawing on wider community partnerships. Each project has enabled the support of student learning to solve particular environmental problems and to showcase high quality science, mathematics and technology teaching and curriculum for geographically separated schools. These projects have included opportunities for teachers and students to better understand and develop knowledge and understandings about sustainability principles and practices fostering a greater understanding and valuing of Indigenous culture. Teacher Associates have been able to contribute to the practical 'real life' aspect of the activities that have served as models for school curriculum development that is relevant to a school's unique social and geographical context.

While the ASISTM tests revealed that only a few students (18 out of 171) participating in these ASISTM projects would want to become teachers, an unexpected positive outcome was the Environmental Scientist Teaching Associate, who was in her final year of study at university, was considering undertaking a Graduate Diploma in Education because she so enjoyed her experience in the schools with the students that she would now like to become a teacher.

Through the outcomes of the ASISTM projects they illustrate the advantages of the need to build sustainable educational partnerships with schools. Two of the schools are continuing

in subsequent ASISTM projects bringing their ideas and experiences into the final ASISTM project round in 2008.

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REFERENCES

Davies, J. (2006). Re-thinking science education through re-thinking schooling. Proceedings of the ACER Reseach Conference: Boosting Science Learning – what will it take? (pp. 56-60). Melbourne: Australian Council for Educational Research.

Tytler, R. (2007). Re-imagining science education: Engaging students in science for Australia's future. Australian Education Review No. 51. Australian Council for Education Research, ACER Press.

Tytler, R. & Symington, D. (2006). Science in School and Society. *Teaching Science, The Journal of the Australian Science Teachers Association*, 52(3), 10-15.

USING SOCIAL COMPUTING TOOLS TO CONNECT REGIONAL AND REMOTE TEACHERS AND STUDENTS IN WESTERN AUSTRALIA

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ABSTRACT

This paper describes the research undertaken in Western Australia that was part of the nationally funded Centre for Science, ICT, Mathematics education for Rural and Regional (SiMERR) research project investigating 'Social Computing Enhancing Learning in Remote Australia'. Social Computing driven by Web 2.0 technology, enable rich social experiences of groups via the Internet. An overview of two case studies using Social Computing is presented; describing how the project was established and run during 2007. Data collected and analysed demonstrate the outcomes that such projects have on student and teachers in regional and remote Western Australia. The findings indicate the potential for social computing to be an extremely powerful educational tool for learners and their teachers. Issues and challenges are also discussed as we attempt to connect geographically dispersed groups via technology in regional and remote areas.

Keywords: ***Social Computing, Blogging, ICT, literacy, Web2.0***

1. INTRODUCTION

In 2008 the New Media Consortium published the Horizon Report stating that emerging technologies are likely to have an effect on learning, teaching and creative expression given the social aspect of the web, where the next generation of social networking will base the organization of the network around people, rather than around content (NMC, 2008, p. 6). Social Computing tools have proliferated over the last few years as Web 2.0 technologies allow more collaborative publishing via the Internet. Blogs and Wikis are easy to use tools which can offer teachers and students the opportunity to create shared understandings through self-publishing, fostering feedback, critical commentary and scope for group and peer editing and creation (Smith, Biemmi Beurteaux & Trinidad, 2008; Trinidad & Turner, 2008). Penrod (2007) states in her book *Using Blogs to Enhance Literacy: The Next Powerful Step in 21st-Century Learning* that the Internet has brought a whole new dimension to writing and writing pedagogy through the new media and meaningful, socially connected learning (Richardson, 2006). Today's students, better known as digital natives (Pensky, 2001), are born into a digital world of powerful social networking tools (eg. MySpace, Facebook) which allow groups to work together virtually while socially connected.

A collaboration between the SiMERR National Centre and the SiMERR-ICT state and territory hubs took place during 2006 and 2007 enabling the investigation and trialing of *Social Computing* tools. The research group undertook the project to raise the awareness of the possibilities for, and impact of social computing on student learning. This national research project investigated the use of possible *Social Computing* tools then tested the supporting of professional learning opportunity for teachers in each state and territory to

implement action learning in their own school, participate in a community of practice via video conferencing and the use of Web2.0 applications. A collection of case studies of the use of social computing to support student learning was produced and the use of social computing for student learning and teacher professional learning was evaluated.

Western Australia is the largest state in Australia with over 2.5 million square kilometers and thus telecommunication networks have the ability to improve learning opportunities for students and staff with access from anywhere, anytime, and ultimately reduce the feeling of professional and social dislocation experienced in many isolated communities (Frid, Sparrow, Trinidad, Treagust, & McCrory, 2007). The full potential of videoconferencing and Voice over Internet Protocol (VoIP) has yet to be fully explored by many schools but a network of 100 Telecentres in regional and remote Western Australian, with 60 Telecentres providing dedicated *Polycom* videoconferencing equipment is operating currently. The issue of providing reliable, low-cost connectivity remains but connectivity is improving through two government initiatives. One initiative is the state-wide broadband networking strategy where the State Government has committed "to provide reliable, high-speed and affordable broadband access, no matter where they live" (Carpenter, 2006) by installing a network in Western Australia similar to the Canadian Province of Alberta's SuperNet. The other initiative was announced in August 2007 by the Federal Government funding broadband infrastructure in 88 Catholic and Independent schools in rural, regional and remote WA (Coonan, 2007). In partnership with the Australian Independent Schools of WA and the WA Department of Industry and Resources and managed by the Catholic Education Office of WA, *The Bush Schools Network* project will allow schools, whose students are predominantly Indigenous, to receive new or upgraded satellite services to remote areas not served by landlines. This project once complete will allow students to participate at an affordable cost in the online learning services offered to help further close the digital divide currently experienced in a geographically vast state (Reading et. al, 2008; Trinidad, 2007).

2. THE CASE STUDIES

In Western Australia two case studies were completed as a part of the national project. One of the case studies was undertaken with an Adult Education Centre in the remote Kimberley area of Western Australia and the other case study was undertaken with a Catholic primary school in south Western Australia (see Figure 1).

Case Study One

This case study involved a group of adult Aboriginal learners (n=6) and their teachers (n=2) in a remote Western Australian town who were able to learn about, and develop Blog sites as part of their literacy and employment skills development. In the initial stages of the project - as students were first introduced to the concept of Blogging, they needed to develop the IT skills required to create an ongoing Blog site, and began to explore a much larger world that was opened to them by the use of the Internet and social computing.

Figure 1: Location of the Two Case Studies

The aims of the project encompassed students' academic, work, and social development, and included:

- Facilitating increased student engagement with learning;
- Enhancing students' understanding of the internet and how to use it as a tool for communication;
- Developing students' technical skills, including using digital cameras, downloading and scanning pictures, understanding and using hardware and software, finding their way through and around a website, following technical instructions, and learning new IT vocabulary; and
- Encouraging development of students' personal skills, such as teamwork, collaboration, helping others, communication skills (questioning, giving opinions and directions) and an increase in self-value as individuals contributing to the successes of a team.

The creation of an organisational Blog allowed the participants to communicate amongst themselves and with other stakeholders, allowing them to be involved in a social computing practice that could increase and assist them with their literacy skills. The project aimed to also encourage participants to communicate via their Blogs with others outside their everyday environment. For a full description of this case study see Smith, Biemmi Beurteaux & Trinidad (2008).

Case Study Two

Year 6 students (n=14), the classroom teacher and the support ICT teacher participated in this case study. The social computing (Blogging) activity was set-up within the MyInternet system. This provided the students with an audience in a safe online environment only accessible to the Catholic Education community providing a wider audience easy access where comments could be made to the students. The students were asked to read a novel

and then discuss what they needed to share about the novel for a book review. Pertinent questions were asked of the students such as "What elements does a book review contain?" This activity was carried out using an inquiry learning process and used a student-developed rubric for evaluation purposes. Specific learning outcomes for this activity were linked to the Curriculum Framework Progress Maps:

- English - R4.1 Interprets and discusses ideas, information and events in texts containing unfamiliar concepts and topics.
- Writing - W4.2 Adjusts writing to take account of aspects of context, purpose and audience.
- Society and Environment - ICP4.4 Develops an informed opinion and communicates this with a particular purpose or audience in mind.
- Technology and Enterprise - I2.2 Uses techniques to access, record, store, manipulate and transmit information and create informational products.

The MyInternet Blog was used to provide an electronic book review to the wider audience. Information was sent home to parents and permission was given for others to comment on the Blog. The audience was the student's peers and the teacher for the initial written book review, then this information was transferred to the MyInternet Blog. The student's Blogs were then viewed and commented on by peers, parents, staff, and the school community via the CathEdnet network. The students compared writing a book review for a class review and writing for a Blog which had a much wider audience. For a full description of this case study see Trinidad & Turner (2008).

3. METHODOLOGY

Qualitative data were gathered from both the students and teachers involved in the two case studies. Interviews were conducted with the teachers and students to answer the research questions.

Three research questions informed the study:

1. What benefits do teachers and students say social computing (Blogging) brings to student learning?
2. What supports the use of social computing (Blogging) for student learning?
3. What are the challenges with the use of social computing for student learning?

Interviews were conducted with teachers (n=3) and students (n=20) after the Blogging experience. Observations of the class took place during the study and pieces of finished written work and the Blogs were compared. Table 1 documents the seven events undertaken in the Social Computing Project with the teachers and the critical friends.

The cycle of activities for the project were designed so that the teacher professional learning included action learning in their own classroom, support via technology and production of case studies to be presented at a national conference.

Table 1: Seven Events undertaken for the Social Computing Project

Event 1 – Initial Professional Sharing – a videoconference to connect all teachers and critical friends, with the purpose of sharing by critical friends of the possibilities of using the new tools and sharing by the teachers about how they perceived use in their own context.
Two videoconferences were organised but each teacher and critical friend was expected to participate in one of these. For *each* videoconference one teacher attended from each state/territory and four critical friends attended and presented about one social computing tool each. Each videoconference was facilitated by the project manager.
Event 2 – Collaborative Planning – a videoconference to connect all teachers and critical friends – sharing of strategic decisions about school students learning experience plan with feedback from all participants.
For *each* videoconference two states (four teachers and two critical friends) combined to support each other in the critical planning state of finalising the strategic details of each school's initiative. Each videoconference was facilitated by two critical friends participating following a pre-determined program.
Event 3 –Critical Friend First Visit to School – a full day to assist teacher to finalise plan including a method of evaluating the experience.
Event 4 – Ongoing Online Support – and online environment created to allow teachers to communicate significant information to teachers, to ask for advice during the implementation process (through individual Blog), and contribute to evaluation (through Wikis) of some events.
Event 5 –Critical Friend Second Visit to School – a full day to assist teacher to finalise case study and to interview teacher and students
Event 6 – Final Professional Sharing – a videoconference to connect all teachers and critical friends to allow teachers to "share" their case studies and open their classrooms to a wider audience. For *each* videoconference one teacher attended from each state and four critical friends will attend. Each videoconference was facilitated by the project manager.
Event 7 – ACEC2008 Conference – all teachers and critical friends attended the conference and presented their papers on their case studies.

4. FINDINGS AND DISCUSSION

The results from the survey and interview data are discussed with the outcomes summarised for the two case studies. The overall outcomes included:

- A greater understanding of the potential of the Internet and how to use it as a social tool for communication;
- Technical skills: using digital cameras, downloading and scanning pictures, understanding and using hardware and software, finding their way through and around a website, following technical instructions, and learning new IT vocabulary (paste, download, search...etc...);
- Personal skills: the project enhanced the personal skills staff members at Guwardi such as: team work, collaboration, helping others;
- Communication skills (questioning, giving opinions and directions)... and an increase in self-value as individuals contribute to the successes of a team; and
- Stakeholder benefit: each organisation benefited from the development of a Blog site that promotes their role in the community and the work undertaken.

What benefits do teachers and students say social computing (Blogging) brings to student learning?

The main benefits were engagement with learning and impact on literacy learning. The Blogging projects clearly engaged the learners with using computers and learning new skills. At both case study sites the teachers found the students to be more interested in what they were doing and more motivated to complete tasks. Positive comments by one Case Study One teacher indicated the student's motivation:

> *It's been really good. They're always asking when we're coming down here … they love it. They can't wait to come down. (T2, G).*

While the other adult literacy teacher in Case Study One commented on the potential for social computing to have a positive impact on these students' literacy skills.

> *And they're learning, as we're going along. (One of the students) was doing a 'can't', so he knew he needed an apostrophe but he didn't know where it was or what it was so that's part of the learning, that this is an apostrophe and 'can't' is short for 'cannot', so he's learning things as he goes along but it's in a more meaningful kind of way (T1, G).*

The teacher at Case Study Two site described the experience for the students to be the "*next step to lift student's interest in writing*" and was so pleased with the results that she wanted to progress to "*develop book reviews into a podcast*" and broadcast this to the wider community. She clearly saw the benefits of social computing to promote learning and enhance student writing through the opportunities of social interaction and communication.

The students who were interviewed for this project felt that using Blogging and emails helped them with their literacy skills. The students were very honest about their abilities and the need to write well because someone was looking at their work.

From an aboriginal adult learner's perspective:

> *Well, … we don't know how to spell or read or write. We just come here and start using this stuff just to get back on tracks, with spelling and stuff (S1, G).*

From a primary school student perspective:

> *Well it helps you with your spelling because if you make any mistakes everybody is going to see them and it helps you pick what sorts of books you like and it helps you see what other books different people like (S6, L).*

The students' responses were focused on the benefits of being able to read each other's work and "*learn about books*". Being able to compare their own efforts in writing with each other was the most common learning reported by students.

This was seen as the major advantage of having a wider audience to communicate with which meant that students needed to be more aware of what they were writing, checking spelling and grammar. This in turn helped students think about their own writing as they were comparing their own work to other student's quality of work as evidenced by the student's comments.

What supports the use of social computing (Blogging) for student learning?

Improvements of the student's ability to write to take account of the aspects of context, purpose and audience were noted by the teachers and evidenced in the work produced by the students. Teachers from both case studies also noted how the students were very conscious of the need to present work of a high standard and repeatedly asked for advice and assistance from the teacher and classmates. Such a process supported the student learning.

Students from both case study sites enjoyed the experience of Blogging and teachers could clearly see the benefits for students publishing to a wider audience especially those outside their classroom. With the Adult Education students they found it was 'cool' to have other people read their Blogs:

> *Yeah, just doing our own Blogging websites, and just putting the stuff in there, and people from uni such as Curtin University doing comments about our photos on our blogging sites. That was really cool I think (S1, G).*

With the primary school students the teacher had attempted to keep the students safe by using the MyInternet Blog system which was accessible by the principal, other teachers, parents and peers. The students had enjoyed the Blogging experience but they wanted more of the outside world to see what they were doing, so feedback from the teacher and the students was that the school should use a more widely accessed Internet Blogging site like Blogger.com next time to experience the full benefits of social computing, that is, reaching an audience outside the school community network. The teacher clearly articulated this:

> *As this was the first time I was doing Blogging, I was aware of the need to keep the students safe, but the students were asking for a wider audience and opportunity to present their work to more people… we need to move out of MyInternet – not wider enough audience – students need a wider audience (T1, L).*

What are the challenges with the use of social computing for student learning?

Some challenges were experienced both by the students and the teachers. Technical issues were encountered and this is summed up in this comment by a primary school student:

> *Bad Internet connections not being able to post your Blog and people not replying to your Blog…spelling and grammar errors! (S5, L).*

During this project the teachers involved were encouraged to share their journey through an online community of practice and were provided support from a critical friend via a videoconferencing linkup. This enabled the teacher to link with nine other teachers from around Australia and talk about, and reflect on, their experiences in an action learning cycle. Two major issues cost of the broadband and connectivity were experienced by Western Australian teachers participating in this project. Broadband is expensive for videoconferencing as it consumes the download allowance especially for a remote Independent school connected via a satellite connection. This caused one teacher to withdraw from the project early in the first year due to the predicted videoconference cost. Connectivity between the different videoconferencing systems prevented another teacher

from connecting to the SiMERR videoconference bridge from the Catholic school *Centra videoconferencing system* due to firewall and connection issues. Teachers from two schools used the Telecentres to successfully access the SiMERR videoconference bridge via the dedicated *Polycom* videoconferencing system. An hourly cost was incurred if the Telecentre connected to the SiMERR videoconference bridge. The teacher who was unable to connect through the *Centra* videoconferencing system then successfully connected via the Telecentre but had to travel 30 minutes to the neighbouring community to use their Telecentre. This project illustrated that connecting between different systems was difficult unless using a Telecentre and costly connectivity issues remain as a major barrier for teachers to easily videoconference in Western Australia (Reading et. al., 2008).

5. CONCLUSION

The research undertaken at the two Western Australian case study sites has achieved as understanding of issues impacting on young primary school students and Indigenous literacy learners using *Social Computing* tools. Through the case studies an understanding of the difficulties as well as the highlights of connecting across geographically remote areas was gained.

The use of *Social Computing* (Blogging) has provided a means for the learners to write for a purpose and audience, and in doing so contributed to an improved understanding of their needs. In 2008 work has continued with the Adult Education Centre connecting further Adult Education centres to participate in Blogging thus continuing to bring the outside world into their community. This is summed up by the comment:

> *They're enjoying the challenge, they're enjoying the technology. And the dignity ... you know, you are using modern technology and that's, like, about confidence-building, self-esteem (T1, G).*

Overall this has been a transformative project connecting teachers with supportive colleagues from across Australia to participate in a *Social Computing* action learning process which has had positive outcomes for each case study site and the students involved. The teachers and students have been able to develop their skills in using Blogging and be further inspired for the potential uses of *Social Computing* tools in their centres to have their students involved in meaningful, socially connected learning.

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REFERENCES

Carpenter, A. (2006). Statewide Broadband Network Strategy. Government of Western Australia. *Media Statement, 29/11/06*. Retrieved 30 September 2008 from http://www.doir.wa.gov.au/documents/BI_BroadbandNetworkStrategy.pdf

Coonan, H. (2007). Clever Networks: helping the Bush Schools Network in rural, regional and remote WA. *Media Release*. Retrieved 30 September 2008 from http://www.minister.dcita.gov.au/coonan/media/media_releases/clever_networks_helping_the_bush_schools_network_in_rural,_regional_and_remote_wa

Frid, S., Sparrow, L., Trinidad, S., Treagust, D. & McCrory, K. (2007). The Western Australian Experience. In T. Lyons, (ed), *A National Survey of Science, ICT and*

Mathematics Education in Rural and Regional Australia: State and Territory Case Studies. DEST: Canberra.

New Media Consortium. (2008). *The Horizon Report 2008*. Retrieved 30 September 2008 from http://www.nmc.org/pdf/2008-Horizon-Report.pdf.

Reading, C., Fluck, A., Trinidad, S., Anderson, N., & White, B., (2008). Connecting Teachers in Remote Australia: Challenges in Realising the Potential of Videoconferencing. Proceedings of the Australian Computers in Education Conference 2008 ACT on ICT. (pp. 426-433). Australian Council for Computers in Education: Belconnen, ACT

Richardson, W. (2006). *Blogs, Wikis, Podcasts, and Other Powerful Web Tools for Classrooms.* Corwin Press: Thousand Oaks.

Penrod, D. (2007). *Using Blogs to Enhance Literacy: The Next Powerful Step in 21st-Century Learning.* Rowman & Littlefield: Lanham.

Prensky, M. (2001). Digital Natives, Digital Immigrants, *On the Horizon*, 9(5), 1-6.

Smith, M., Biemmi Beurteaux, E., & Trinidad, S., (2008). Blogging in the Bush: Using social computing to enhance adult literacy in remote Western Australia. Australian Computers in Education Conference 2008 ACT on IcT. (pp. 426-433). Proceedings of the Australian Council for Computers in Education: Belconnen, ACT.

Trinidad, S. (2007). Closing the digital divide: Education Telecommunications systems in Western Australia, *Australian Educational Computing*, 22(2), 32-36.

Trinidad, S. & Turner, D. (2008). Using social computing to enhance children's literacy in regional Western Australia. Proceedings of the Australian Computers in Education Conference 2008 ACT on ICT. (pp. 581-583). Australian Council for Computers in Education: Belconnen, ACT.

LIST OF PRESENTATIONS BASED ON ABSTRACTS ONLY

(The following ISFIRE presentations were based on refereed abstracts without full papers. Abstracts can be found in the Symposium Program)

Andrews, J., & Wilson, M. *EGATS! Our Places, Our Spaces*

Arthur, D. *Comparing the Performance of Rural and Metropolitan Schools on a State Wide Science Test in New South Wales*

Barrie, D. *Technology: Improving resources in rural schools*

Belford, S. *Boys Building Together*

Belford, S., & Cain, D. *Superheroes In Technology*

Belford, S., Cain, D., & Tom, M. *Using Collaborative Technologies to Optimise Curriculum Outcomes for Small Rural Schools*

Birden, H., & Page, S. *Rural Medical Education on the North Coast*

Choi, Y., & Lew, H. *The Effect of "Cyber Home School" on Korean Students' Mathematics Achievement*

Connor, V. *Senior Secondary Mathematics and Science Lesson Study Using Remote learning teams*

Connor, V. *Answering the Needs of Teachers Who Teach K - 6 Grammar: A professional development model for rural and regional schools and systems*

Cooper, M., Green, B., Reid, J., Hastings, W., White, S. & Lock, G. *Encouraging and Nurturing Teachers in Small Rural Communities in Australia*

Crump, S. *E-learning for Rural and Isolated Australians: Satellite delivery and improving outcomes*

Elliot, A., & Keenan, B. *Growing Our Own: Teacher education for remote indigenous communities in the Northern Territory*

Heard, M. *Scientists in Schools: A rural focus*

Jefferson, J. *QuickSmart Numeracy: Closing the gap in the Northern Territory*

Mackander, S. *Katherine School of the Air Quicksmart Trial 2008*

McPhan, G. *Developing context-based Learning Sequences in Science: Insights into the professional development needs of rural and regional teachers*

Maher, B., & Riddell, S. *Enhancing Curriculum Choices in Vocational Education for Isolated Rural Secondary Students*

Merrotsy, P. *The Education of Gifted Students in Rural Contexts*

Monaghan, M. *Freeing Working Memory to Enhance Student Growth*

Tytler, R., Symington, D., Kirkwood, V., & Malcolm, C. *Innovation in School Science through School – Community Links: Learning from the rural experience*

Tytler, R., Malcolm, C., Symington, D., & Kirkwood, V. *Professional Development Provision for Teachers of Science and Mathematics in Rural and Regional Victoria*

Watt, D., & Dyason, J. *Interactive Pedagogy – the four Ps*