‘Somewhere different to go’

Report from SiMERR Western Australia

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INTRODUCTION

Western Australia is a state of 2.5 million square kilometres with only about 400000 people living outside the Perth metropolitan area. The distances are great, the population is sparse, and people live and work in a wide range of geographic and socio-economic environments. There are desert regions and isolated mining sites with daily temperatures that can soar to 50 degrees. There are also lush forests, agricultural lands, and seaside resort communities. The capital city, Perth, is known as the most isolated capital city in the world, so that, even with a population of over 1.2 million, it is a city characterised by physical separation from other populated centres. Yet, as one travels away from Perth within Western Australia, there is much diversity and richness in the social, cultural, economic and physical environments. It is in this context that this chapter is written.

METHOD

Four schools in Western Australia participated in the focus group discussions. The project team selected the schools to represent some of the geographic and socio-economic diversity of the state (see Table 2), and in this regard the phrase ‘regional and remote’ is used in place of ‘rural and regional’ to describe more appropriately the context of these WA schools. Once a school was identified as a potential focus group SITE, a researcher contacted a teacher or the principal to organise an on-site visit. The visit involved individual interviews with teachers and principals at Bush Junction, Rocky Hill and Sandy Cove primary schools and group interviews with teachers at Seaview Catholic College. The team conducted individual interviews with parents at Rocky Hill Primary School, group interviews with parents at the other three schools, and group interviews with students at all four schools. Decisions about whether to conduct interviews individually or in small groups were based upon what the school and individuals deemed to be most convenient and efficient at the time. For example, it was usually most convenient to conduct the teacher interviews individually when each person had free time during the day or as a relief teacher rotated between classrooms to provide free time. In addition, an informal meeting was conducted in Perth with two experienced teachers from the northwest region of WA. Thus, the teacher interview sample overall consisted of 23 teachers, 17 parents, and 20 students (see Table 2).

Table 2. School and focus group participants

School *	Sector	Type	Location	MSGLC Category	Student population	No. Teacher	No. Parents	No. Students
Rocky Hill Primary School	Government	Primary/ Secondary, Years K-9	Remote inland mining region	3.2 Very Remote	50-60	5	2	3
Bush Junction Primary School	Government	Primary, Years K-7	Regional southwest coastal suburb	2.1.2 Provincial City	500+	6	6	7
Seaview Catholic College	Catholic	Primary/ Secondary, Years K-12	Remote northern coastal town	3.1 Remote	420	6	7	7
Sandy Cove Primary School	Catholic	Primary/ Secondary, Years K-10	Remote northern coastal community	3.2 Very Remote	80-120	4	2	3

* School names are pseudonyms

Within the context of student learning in science, ICT and mathematics, the interviews focused upon each individual's views of the school's strengths in helping students achieve their potential, obstacles to improving learning outcomes and programs or practices that have been successful in supporting outcomes. They also explored the nature of the curricula and recommendations for how education providers might support the improvement of student learning outcomes. In a more general context, teachers and parents (but not students) were asked to comment on teacher attraction to and retention at the school, their reasons for living and working in that community, their reasons for staying or planning to leave the community and other issues they deemed relevant to rural and regional education.

The findings are reported initially as a series of four case studies, each adopting a grounded approach to data analysis (Powney & Watts, 1987). Thus, the initial emergence of key themes and issues within each case study proceeded inductively. For each case study, one researcher and a research assistant independently analysed interview transcripts to identify commonalities and issues raised by the interviewees. These key themes and issues, although reported in a structure of distinct components, are not in fact independent, but rather interlinked, creating a web of interconnected factors described by the interviewees as having an effect upon student learning outcomes in science, ICT and mathematics. Further, some of these factors do not appear initially to be directly connected to science, ICT or mathematics learning. In other words, the factors that help or hinder student learning in science, ICT and mathematics are not always directly related to these curricular areas, but rather are more global aspects of educational contexts fundamental to what schools are able to achieve.

Thus, an initial finding from the focus group discussions was that in order to consider the improvement of student learning outcomes in science, ICT and mathematics, it is necessary to take into account a number of holistic and contextual features of regional and remote education that affect schools and teachers. In each case study the identifying 'titles' for key themes and issues have been chosen to encapsulate the essence and foci of subsequent discussions. The order of these subsections has been structured to create a logical flow that captures an overall contextual picture. Thus, the case studies were constructed independently, and although there are similarities and differences between the theme/issue 'titles', the exact 'titles' were created to best describe the related discussions and evidence. Subsequently, final data analyses involved an examination of the commonalities and differences in the themes and issues that emerged across the four case studies. These are reported as assertions (Erikson, 1998) that form the basis for conclusions and recommendations related to the WA focus group findings.

ROCKY HILL PRIMARY SCHOOL

Our job is, in these areas, is basically teaching. You live the school.

Driving into Rocky Hill, you feel like you are entering a different world. You have just driven much of a day in travelling from Perth – through the outer suburbs, then through the wheat belt into the outback, and then several more hours of driving through sparse vegetation and rocky terrain. You finally reach Rocky Hill, a small community of about 200 people in a formerly vibrant mining area, and when you drive down the main street you spot a post office, police station, a pub, an old-style hotel bed and breakfast, and a few small shops. Nearby are the nursing post, the school, a large community hall and a large sports oval. You passed the nearest supermarket about one hour before reaching Rocky Hill.

The school, situated off the main street, has an enrolment of about 50 in Kindergarten up to Year 9. Although officially a primary school, this year there were 12 students in Years 8 and 9, as an initiative to support student retention. Previously, students had to travel an hour to attend high school. The school has a grassed sports oval, a main reception area, a principal's office, a very small kitchen area serving as a staff room, three classrooms, and some additional 'sheds' for use as a library, storage, and a workshop. Along with the principal, the teaching staff includes three teachers (Years K-2, Years 3-7, and Years 8-9), an additional support teacher, an early childhood teaching assistant, and an Indigenous teaching assistant.

Student transience

A key point noted by all the teachers was that students will not achieve learning outcomes if they are not at school, so the issue of attendance is paramount. First, one must get the students to school. This is a particular challenge with some of the Indigenous students whose culture and lifestyle do not always support regular school attendance:

> It's a huge problem, a huge problem … we get them and then they go away and they might not attend school for say two or three months, maybe more, because some of these children go out towards the desert and a more traditional type setting, and not to another school somewhere. (Nancy, teacher)

> A lot of students are transient, you know, they come and go. That hinders their learning, that's an obstacle … where they turn up one day then they're not there the next, and it really affects your programs. (John, teacher)

It is noteworthy that the three students interviewed at Rocky Hill (three girls in Year 8) had all been to several schools in their lives, generally widespread around the state, with one student noting: 'I've been to eight. Newman, Geraldton … Mandurah, here, Geraldton two different schools.' These students did not give any comments on the effect moving from school to school might have had on their learning, except indirectly with regard to their perceptions that other locations had provided more 'chances to do other things'. They spoke nostalgically of their previous schools, focusing on what they remembered that made those schools 'more fun' than Rocky Hill:

> You don't do farm here (Student 1). … Yeah, you don't go out and learn about cows, sheep, goats. (Student 2)

> You didn't have to wear shoes or nothing, and we went on excursions all around. (Student)

> You got to go home for lunch and have a swim. (Student)

Two things the teachers noted as strengths of the school regarding efforts to support school attendance and engagement in learning, and also school retention into the high school years, were the community relationships they actively fostered between the school and families, and the use of ICT across the curriculum. These two issues are outlined below.

Community and living environment

Key to developing learning programs appropriate for the student clientele and for developing positive relationships between the school and the community is that the culture of living in a small town leads to people knowing one another. This fosters communication and connections that the teachers see as an asset for the school:

> I guess developing a relationship with the kids and their families, which we probably wouldn't have, that I didn't have in Perth. And that's definitely an advantage. I can communicate really well with the parents and I'm on the phone to them all the time and, you know, like I can go to the pub tonight, and say "G'day" to the parents and they'll say, "How's it all going? How's little Johnny going with his Maths? We've been trying at home." And so I can, sort of give real instant feedback, rather that waiting for report time or anything like that. (Nathan, teacher)

> The smallness of the community makes us a lot closer-knit. Communication's a lot easier … I think it's a plus because you do really become part of the community. (John, teacher)

Parents also saw the culture of knowing 'everybody's face' as a positive community-oriented feature of living in a small town:

> I like how you know everybody's faces. It's not like in the city where you walk down the shop and you don't know anybody and there's no one to say, "Hi, how are you, Elizabeth?" Or even if they don't know your name, just "Hello". (Elizabeth, parent)

In comparison, the students' views on Rocky Hill were that, although they liked living there, they found it 'boring'. They expressed a desire that there be more to do for one living there:

> You go to school and it's not as boring, or hard, and you get one-on-one with the teachers … [but there is] not enough chances to do other things. (Student 1)

> The thing I like about it is when they have festivals and bands and that here … out-of-towners coming to do an activity. (Student 2)

School created curricula and the integration of ICT

At Rocky Hill the freedom of the school to develop its own curricula within the guidelines of the West Australian 'Curriculum Framework' (Curriculum Council, 1998), together with the teachers' knowledge of their students' skills and what motivates them, makes it possible to build resources and develop learning programs that motivate students to come to school and engage in learning activities:

> A big strength would be that we can focus on other areas and that helps with our attendance. Like our focus on sport and music, with the core subjects … the kids might not necessarily want to do it, you know. Kids don't come and go, "Yeah maths, maths today!" But they know we do maths in the morning and they know they've got to do that to get to the music and sports in the afternoon … I think a strength of this school is getting kids here. (Nathan, teacher)

> … we do a lot of investigation, we do a lot of hands-on things and the kids are benefiting from that because they're meeting the criteria across everything … because we do all those rich type tasks we can often achieve a few things, more than one thing at a time. (Nancy, teacher)

> … because they're very low in literacy and numeracy, you have to find a lot of other ways to get messages across or to get content across and I think that we're quite strong on ICT. We've got projection equipment, we've got laptops, we've got video cameras, lots of technology. We're looking at Smartboards as well. (John, teacher)

ICT has proven to be instrumental in the process of motivating the students. It was mentioned repeatedly by teachers and students as a strength of the school's learning programs. ICT skills in the use of a wide range of software programs are intentionally developed (e.g. word processing, PowerPoint, publishing programs, Internet searches). Furthermore, the visual and hands-on nature of these technologies are viewed by the teachers as appropriate to the learning styles of the students, many of whom lack literacy skills to learn effectively with more print-based learning materials.

The students' perspectives on the value of ICT within the curricula were in agreement with those of the teachers. They noted 'one of the best parts' (student) was that they used various publishing and presentation software to produce reports and brochures and also used computers to 'make our own website' (student), 'explore the Internet' (student), and 'get information off websites' (student).

In comparison to ICT, the science and mathematics curricula were not commented on by the teachers, parents or students with the same high degree of enthusiasm. There was a recognition that science and mathematics could benefit from being given more attention, particularly if supported with additional resources to implement engaging, relevant learning activities. Nevertheless, the students, while noting a desire to have practical, hands-on school activities like sport, computers and agriculture, did not express a desire for mathematics to be other than what could be described as a 'traditional' mathematics curriculum:

> [I'm] used to writing out of books and getting all the stuff out of books, like we did pi and stuff like that. (Student 2)

Students also expressed satisfaction with the mathematics challenge competition (often times tables) they did everyday 'like spelling but with maths … like when they have wrestling and they have tag teams' (Student 1) and 'a champion that wins out of the whole class' (Student 2).

Considering the value teachers placed on hands-on activities and the use of ICT within students' learning programs, it is not surprising that they viewed the allocation of funding for resources – material as well as those related to people – as an issue affecting student learning, the issue discussed next.

Suitable allocation of resources

Although staff did not in general view the school as lacking resources for teaching and learning, including books, software, materials, and computers, they did express concern and frustration with the restrictions placed upon resource funding allocation at state level as well as within purchasing policies:

> In a country area like this where you don't have access to the science materials, to be able to really make a laboratory on a computer where the kids can actually go in and manipulate chemicals and see what reactions are. But that sort of thing, in a laboratory-type environment on the Internet … getting your hands on it … you look at the price, it's fifteen hundred dollars to buy a program, then you have to buy the licence to put it on different computers. But to get that for an area like this would be of immense value. These kids could be right up there. (Nick, teacher)

> We aren't the same as a big metropolitan school, and laying some of the rules on us makes it very hard to resource it properly. Technology and things like that are very important to smaller schools to help us achieve the same sorts of outcomes because they can bring things to us that we can't perhaps create. … A lot of the funding things you can go for [are] very restrictive regarding high technology … they won't let you buy things like that, for some reason. (Nancy, teacher)

The allocation of funding for professional development was also of major concern to all the staff because they did not see it as sufficient for meeting their needs in relation to travel costs and teacher relief time. This is summed up clearly in the words of Nathan who reported he had clocked up over 6000 kilometres already that year, at his own cost, to attend 'required' professional development sessions [e.g. *Making Consistent Judgements* program]:

> I've definitely done lots of K's, so I get lots of tax back at the end which is good because the school doesn't pay me. I just pay for it all. … Yeah, the budget is just blown. … what they could do with schools here is really, really beef up our professional development budgets. … if you wanted to be a real tightwad, you could do it, but you know, I'd rather be a good teacher and be poor and go and do all these things. ... And then having support [is important] because if I'm away, because of the travel time, if I've got a maths PD in [regional city] it's basically a day there, PD two days and then a day back, so you've missed four days, you've almost missed a whole week to do a PD and who's covering my class? So that's an obstacle as well for excellence in the kids' learning. (Nathan, teacher)

Nathan's words reflect his valuing of professional learning as a teacher, and also his commitment to being a 'good' teacher. The dedication of the teachers was evident in their attitudes to their work, and in what they said about what they do as teachers living in a small, isolated town.

Teacher commitment and adaptability to the environment

The teachers' lives are challenging and demanding in ways different from those of city teachers. Their lives require a degree of personal resilience, resourcefulness, and adaptability which they perceive as much greater than for a city teacher. It requires them to be multi-skilled at school to work much more independently in their daily work, to be an active part of

the local community and to be flexible and creative in living in an environment with few basic services:

> You've got to put this hat on, that hat on, that hat, and you come up with, like, ten hats on. … We had a problem with our server, we couldn't get the Internet for three weeks. … I volunteered to help fix the server. It was going to cost a lot of money, money that we didn't have, so I had to fix it myself. So juggling teaching with computer technician support [is a problem]. (John, teacher)

> You've got a huge amount of other work to take on because you're in a small school with a small staff plus the community issues. It's expected that you would go out there and do something in the community so you're taking on this huge amount of other stuff as well. (Nancy, teacher)

> I haven't found a teacher, in this district, who didn't like the district, who does not like being here. I found that for teachers here, our job, in these areas, is basically teaching. You live the school. (David, Principal)

Novice teachers and teacher retention

With the exception of the Principal, all teachers at Rocky Hill were in their first or second year after graduation, and all expressed concerns about the challenges of being novices in a small remote school and how the common practice of placing new graduates in such demanding situations does not promote equity in educational opportunities for students. For example:

> If you take into consideration one of the schools that I did my prac at, where you've got teachers … [who] have twenty years worth of teaching behind them. That's a lot of shared knowledge that you can gather. … [I'm] brand new to teaching. I've experimented on the kids with doing different things and seeing what works and what doesn't and whilst that's part of a learning process for me, and in some ways it's a learning process for them, it is also a hindrance for them as well. If you had a seasoned teacher come up here and teach them for a year, [someone] who's got a wealth of filing cabinets to play with and also the years of knowledge that they've got, they could most probably come up here and do a brilliant program. But none of them want to come here and so these kids all get new graduates. Some are good, some are tragic. (Nick, teacher)

All the teachers also noted that attracting teachers to and then retaining them in small remote schools was an issue that extended beyond the school environment to the challenges of living and working in a remote community. Parents were also aware of the related living challenges for teachers, having experienced some of them themselves:

> When we need people it's just so hard. It's hard to get them here and it's hard to keep them here. Because it's hard enough living in the country anyway. … there's not enough understanding … there are some advantages but there's lots of disadvantages as well. They don't realise you can't just pick up the phone and hop down to the dentist or doctor. … I don't think the city people realise. (Elizabeth, parent)

In particular, the challenges associated with distance and isolation, and the need for teachers to have access to suitable housing, emerged as two prominent issues.

Distance and isolation

Small remote communities and small schools place teachers in environments in which they are professionally isolated. They do not provide teachers adequately with people-related resources, professional mentorship, or rich, spontaneous, professional sharing and discussion:

> I think an obstacle would be the isolation, you know, because by teaching maths myself, now that I teach high school maths, and not having any other high school maths teacher for 80 kilometres that way and 120 kilometres that way, I'm the only high school maths teacher in [Rocky Hill]. So there's no one to sort of bounce ideas off regularly. (Nathan, teacher)

> You've got that community [in a larger school] where you can actually sit down in a break and you pick the brains of all the other people. One of the things I would love to have is maybe someone to turn around to, just over a morning tea or coffee and say, 'What have you done in this area to gain success?' And they've got, like, ten, twenty years worth of trial and error that they can share with you, that might give you another idea. (Nick, teacher)

> It's three days for us [for PD]. We leave the day before and we come back the day after because we're hampered by distance, by the local environment. Kangaroos. You can't travel after dark. … if you do hit a roo you've lost your car for weeks on end, so then you can't go anywhere. So these things are very difficult for us. People planning PD need to look at these schools and how they do it. (David, Principal)

The need for better access to professional support and development was also recognised and emphasised by one of the parents:

> [I would recommend] more resources and things like that. Don't make it so hard to teach. … Help the regional schools out a bit more than what they are doing. Maybe get out here yourself instead of living in the city and coming out, flying out or driving out for a couple of days, doing your rounds and then going all the way back again. Be out here in the first place, you know, living amongst us. … Or at least be close, be in the local region, not down in Perth. (Elizabeth, parent)

Living environment – housing

If a teacher goes home after school each day to an environment in which 'they wouldn't be allowed to house prisoners or refugees' (Nancy, teacher), then it is little wonder that sub-standard housing was identified by the teachers as one of the biggest issues impinging, although indirectly, upon student learning:

> That's the biggest thing we could do. If we had decent housing for the teachers out here, we would retain our teachers and would improve the learning outcomes of the students, because they'd want to stay. (David, Principal)

> I had to live with a non-fully functioning hot water system for three months and a cooker that wouldn't work properly, and it does affect your teaching quality because a home's supposed to be a haven, it's supposed to be your castle. [It's] like, you finish work, then you have to do more work when you get home … I find I'm busy fixing, or trying to fight for things to get fixed. (John, teacher)

> Things like housing, housing is a big one. You'll probably get that from anyone. I talk to teachers, you know, in nearby towns, it's all housing, what it comes down to. Whether the houses are suitable and a lot of them in the area are not. So that is a killer and teachers will leave because their houses aren't up to scratch. (Nathan, teacher)

BUSH JUNCTION PRIMARY SCHOOL

It's coastal, it's close to Perth, has good facilities.

Bush Junction Primary School is located in the outskirts of a medium-sized coastal regional city (population approximately 30000) in the southwest of Western Australia. The locality of the school community is a housing subdivision approximately five years old, with the immediate area and the adjacent suburbs mainly comprised of new houses. There is a growing infrastructure of shops and local facilities.

The school is housed in a series of modern brick buildings spaced around a horseshoe-shaped grassed area. Each building is open plan in design and accommodates four class groups of a similar age range. Teachers generally work with one of the class groups and share a central area of the building. The school is relatively well resourced and equipped. Of particular note is that the school has a science coordinator, Anna[1], a situation not common in WA primary schools. Anna has organised the purchase and storage of a good quantity and range of equipment and consumables to support science teaching in the school.

Staff at the school, approximately equivalent to 20 full-time teachers, are of a range of ages and teaching experience. The school is a merit select school (i.e. appointment is by interview), but in reality many of the staff have been appointed via the Employer Initiated Placement (EIP) procedure by which vacancies are filled by teachers who are surplus in other schools.

Living environment

Parents and students had much to say about how they 'liked' living in the area, for the lifestyle and the physical environment. Parents commented on 'community' as a positive feature of the area and the school, with children being able to attend a local school with local friends. Further, both parents and students commented on 'trees' and other general natural features in their living environment they viewed as providing a quality lifestyle:

> We chose [Bush Junction] because it was closer than travelling 11 kilometres into town. And the small school was very appealing as well, and just to be local so the kids could have local friends. (Parent)

[1] Pseudonym

> They climb trees like we used to do. … the kids love the trees … I love the trees. (Parent)
> I like it here because I've got five acres and there's heaps of space to run around in and we have heaps of animals at our house and we've got trees and not much traffic. (Hilary, student)
>
> I like [Bush Junction] because it's like a close community and I feel safe and I like all the streams and that. (Female student)

The teachers also liked living in the area. Most had a 'country' background, either in their earlier lives or in their teaching experiences. The school and location presented an attractive situation for most of the staff, and since they had gained 'permanency' (i.e. not a temporary contract for a year or possibly less) they were planning to stay:

> It's coastal, it's close to Perth, has good facilities. (Heather, teacher)
>
> Teacher retention and attraction is not a problem. There are many teachers who are applying to come to this school because it has a very good name because we have a very supportive principal, staff and parents. (Melissa, teacher)

Professional collegiality and curriculum leadership

Teachers spoke repeatedly about 'flexibility' as a strength of the school. They related this to both the set-up of the teaching spaces and also to a feeling of collegiality and support throughout the school. The modern buildings had been designed to be open and this facilitated a collegial or team atmosphere as teachers and students shared spaces. One teacher suggested that the flexibility of space allowed her to meet the different learning needs of her class more easily. The other staff made similar comments:

> I think one of the strengths is the flexible working space. The ability to create larger, or smaller working areas through those doors. We could have the whole block open or we can have half of it or just one class. I think that flexibility of the actual structure allows us as teachers more opportunity to group the kids flexibly. So we can focus on the high fliers, we can focus on the kids that are struggling, we can have a larger group of kids that are doing okay and we can manipulate, move people around. (Anna, teacher)
>
> Well basically because it's a brand new school we've got the set-up, lends itself to all that we do. It's more open. You've got people next door that you can work along with and that opens your space up a lot more too. (Melissa, teacher)

The teachers also saw science teaching as a strength of the school, due to the curriculum leadership of a particular teacher (the Science Coordinator, Anna). They noted how their teaching had been enhanced and, by implication the students' learning, by the support received from the Science Coordinator. The Coordinator obtained resources, organised and maintained them, and provided support in teaching science:

> Science is great. The teacher in charge of science here has got the room so well resourced. I must admit I tended to not do science in past years but working with the teacher next door to me, we've just done science for the last three terms and it's been excellent. If you want to do something you go to the resource room and [Anna's] got it there. (Ella, teacher)

> It's becoming much more organised [science] … there's equipment that we [Pre-Primary] are able to borrow. (Kelly, teacher)

Teacher content knowledge

The complex area of teacher content knowledge in science, ICT and mathematics was seen by the teachers as a critical factor in helping children achieve their potential. In particular, the lack of, or limited knowledge related directly to basic science content information, especially in the non-biological areas, was noted as a hindrance to students' science learning. Teachers were not concerned with pedagogical issues related to science since they felt they had received sufficient professional development in these areas in recent years, but rather, they were unsure of their own understandings underpinning what they were teaching. That is, they were confident in *how* to teach but not as confident in *what* to teach with regard to science:

> Content stuff, that's one of the big things that I want to bring up in terms of science. … I think that's one thing that can hold kids back, if the teacher is not confident in the subject area that they're teaching … and there hasn't been PD available to up-skill teachers in that area. It's been up-skilling in teacher approaches and it's been up-skilling, now, in assessment. But it's kind of assuming that teachers have already got the content knowledge. (Melissa, teacher)

There was a similar feeling about limited knowledge in mathematics and in ICT. Lack of confidence, negative experiences, and lack of content knowledge restricted what a teacher could do to support students' learning:

> In maths there are so many books published, there are so many schemes out there that you can cobble together a program without actually having to understand an awful lot of it yourself. But that doesn't make you a good maths teacher … able to ask the right questions and support those kids when they're really struggling, by showing them a different way of doing things. … Same with ICT. It's a bit on par with science. People don't really have the skills to be able to extend stuff. They're really relying on the fact that the kids know what they are doing because they've got computers at home and have had time to play on it. I don't put ICT into my maths lessons and yet I know I should … but I am just not confident. (Anna, teacher)

Thus, professional development in fundamental knowledge was seen as a need by most of the teachers. The focus placed on science within the school by the Science Coordinator had highlighted science as an area for development, and this had led the teachers into acknowledging a lack of content knowledge, and had broken the culture of 'everyone assumes that you know all this stuff' (Anna, teacher). That science learning had been enhanced was also evident in the students' comments. They all enthusiastically stated they liked science, with one saying, 'We have a really cool teacher to do science with' (Neville, student). However, in comparison the students' general attitudes to mathematics were not positive, with most saying they did not like mathematics:

> I don't like maths. I really don't like division, subtraction, multiplication, fractions and all that. … because I'm not able to do them really good. (Female student 2)

> I don't like maths because I find it hard to take-away and divide and do all sorts of stuff. (Female student 3)

School created curricula

Teachers liked the 'freedom' of the Western Australian *Curriculum Framework* (Curriculum Council, 1998), which allows them to develop programs at school level that they see as appropriate for their students. Some admitted to an initial feeling that the *Curriculum Framework* was too general and broad, but once they became more confident with some areas, they then began to work with the necessary detail embedded in the related Outcome Statements documents (for example, Education Department of Western Australia, 1998). They did not want a specific, detailed syllabus, or something that is unnecessarily prescriptive with regard to what students should be taught:

> It [Outcomes Based Education] gives you such a wide variety of choices to go with what's interesting to the kids. You've still got to teach skills and use the outcome statements ... as an audit and you need the syllabus, you know, to be able to pick up the information. But to have to come back to prescriptive, you have to do this, this and that, like we used to, is horrible. (Katie, teacher)

> We've got the outcomes and when they first came out I thought they were too general but now, when I look at them, that's possibly why I'm enjoying teaching more than I did before because it was too specific. It was very book-orientated, it was very, alright you must do this, in my first years of teaching and I guess that helped me then, but now I like to have a bit of freedom. I like to say alright, they need to have these skills, whatever, and you can get there however. I'm doing Earth and Beyond, Life and Living [strands in the science learning area]. … So within that we're able to be fairly general with what we can do that's science. (Melissa, teacher)

Parents' and students' comments on the school's science, ICT and mathematics curricula focused more specifically on the nature of the learning activities provided. Mathematics was not perceived to be 'hands-on' or 'real' in the way that science was, with the practical 'everyday stuff' (parent) provided in science lessons leading to science being a well-liked subject by the students. Similarly, the variety of uses and the practical nature of the use of ICT, particularly for Internet research, were seen as positive aspects of the curricula. Both parents' and students' perceptions of and experiences with the school's science, ICT and mathematics curricula are highlighted in these comments:

> The maths could be more hands-on maybe and they would probably like it better, doing like shop systems where they've got to have change and money. And that might make it more interesting for them. (Parent 1)

> [to improve students' learning in mathematics it needs to be] more relevant, like the way they've tried to make the science really hands-on. Make maths hands-on. (Parent 2)

> I like science. I like hands-on stuff where you make stuff, and I like dissecting sheep's brains. (Stephen, student)

> I like science because we get to make models, like volcanoes, and use chemicals in them. (Female student 1)

> At school I use the computers a lot. I do Microsoft Excel, Moviemaker, Microsoft PowerPoint … Microsoft Word and the Internet for research. (Larry, student)

> I use the computer at school for research and emailing people for what we are researching. (Female student 2)

Distance and professional development

While Bush Junction Primary School is close to a regional centre, a regional university campus, and a District Education Office, teacher professional development remains an issue. The 'PD is focused on Perth' (Anna, teacher), and the time taken for travel is a problem in that most teachers are reluctant to drive so far. For teachers at Bush Junction, professional development has to be specific to the context of their particular needs, and it needs to be accessible in regular school time:

> It's like the PD is focused on Perth, which is where the bulk of the teachers are. That's fine, but for anybody else, travelling, it's hard work. … What about everybody else? And that stops people from learning new things because the travelling is too difficult. … You've got to be committed, keen and enthusiastic to, after your teaching day, put yourself through professional development. … If it was done during the school day, part of your up-skilling during the day, you wouldn't have any problems at all. Then it will be down to finance. Can the schools release teachers because you need relief teachers. … because to go to Perth is a whole day. You're not going to go after school to Perth, you're going to need the whole afternoon to get up there. People are going to think about driving back in the dark. All those logistical things. (Anna, teacher)

The effect of distance on learning opportunities for students was also noted by one of the parents in the context of what are easily accessible to the students as resources or activities to support or extend learning:

> Scitech [an interactive science centre located in Perth], yeah, we don't get a lot of that here and even the maths competitions and the science competitions [activities organised by the professional teaching organisations], you do have to go to Perth for. (Parent)

SEAVIEW CATHOLIC COLLEGE

Somewhere different to go.

Seaview Catholic College is located in a small northern coastal regional city. The journey from Perth to visit the school takes over three hours by commercial jet, or one must drive for two to three days. It is one of five schools servicing a local regional population of about 18000.

The school building is modern, less than ten years old, and well resourced. It is built in modules around grassed playing areas. The student population in K-12 is over 400 and there are 30 teaching staff. Two of the teachers provide curriculum support and one, who supports ICT, has introduced interactive whiteboards and a new computer laboratory with 25 new computers. The older computers are now used in classrooms throughout the school. Seaview once had additional funding in recognition of its Indigenous student population, but this was cut recently, eliminating specific endeavours such as a funded lunchtime homework support program.

Living environment

Parents and students spoke about great satisfaction with living in the Seaview area, and most planned to continue living there. Many had lived in the area a substantial period of time, in many cases all their lives and with previous family connections to the school, and most had no desire to live elsewhere. Parents referred to family histories or the lifestyle as factors relevant to their plans to continue living in the area. Students also spoke of how they liked the lifestyle, but they also often made reference to a desire for 'more to do' (Alice, student). The parents' and students' feelings about living in the Seaview locality are reflected in these comments:

> I've lived here all my life. It's my home town. … I chose this school for them because their father went through [Seaview] as a child. … I like the Catholic ethos of caring, sharing, … and being a Catholic school, teachers here go above and beyond. (Debbie, parent)

> I've lived here for about 14 years. I am originally from the city and just gravitated this way for work and whatever. In your little heart, it just gets into you and you just don't leave, do you. You hear of people coming for two weeks and ten years later they are still there. [It's] the lifestyle. (Sharon, parent)

> I like the cyclones and stuff. … I like the quietness, but I like being able to do stuff and there's not much to do here. (Yvonne, student)

> I enjoy living here because it's fun and you don't have to dress up just to go outside. Like, in the city you always have to wear shoes. (Scott, student)

In comparison, the teachers did not have a long history of living in the area, even though Seaview was no longer officially classified as 'a difficult area to get teachers to' (Susan, teacher). The period of employment at Seaview Catholic College for the teachers interviewed ranged from eight weeks to four years, with the average stay being two years. Thus, retaining teachers to live and work in the area was an issue identified by the teachers.

Teacher attraction and retention

The teachers interviewed had come to the school and the community for various reasons, including guaranteed employment, non-urban living, and travel:

> I saw an ad in The Age [a Melbourne newspaper] … and I wanted to come to [Seaview region] because I thought it was a transient population where it would be easier to meet people, as opposed to rural Victoria or somewhere like that. (Peter, teacher)

However, although attracting teachers to Seaview was not considered by the teachers to be a problem, retaining teachers was an issue. In the previous year 17 out of the 30 teaching staff had left. The average stay of teachers was cited as two years, due partly to a short-term employment policy of the employer (Catholic Education Office) by which contracts are offered for two years only:

> Retention is an issue, but maybe it's because management thinks they are only going to get two years from everyone and they view everyone as only a short-term proposition. Whereas if they changed their attitude, that people were going to stay longer, that might result in change. (Jennifer, teacher)

The lack of retention of staff was mentioned by some teachers as an issue affecting outcomes in science, ICT and mathematics. One teacher described how when teachers leave, their knowledge and resources leave with them. Another teacher described how this transience leads to things in the school happening in an unplanned, non-strategic way:

> A lot of things happen as a knee jerk reaction, because parents or someone says this is not happening or we need to do this. And so everyone jumps in response to that … instead of planning for that and how we can make it more workable. (Jennifer, teacher)

In contrast, the parents did not see staffing as an issue at the school, speaking instead of the commitment of the teachers to their work and mentioning features of the school they perceived to be strengths for supporting their children's learning:

> Small classes. There doesn't seem to be a high teacher turnover. Initially some of the teachers we get here are just starting off, they are in their first year out, but they stay and they gain the knowledge about kids, but also they want to be here. It's more than their job. … and also we have a specific teacher for computers. What more could you ask for? (Janice, parent)

School and community environment

Seaview Catholic College was chosen by many families because of its Catholic ethos and supportive community, and parents spoke with satisfaction about a positive school and community environment. The local Indigenous people are well established, they tend to stay in the locality, and the school accommodates students from some third generation families. Parents had high aspirations for their children and their education. They believed the school could provide the learning environment and personal support needed for students to achieve:

> Having teaching assistants from the community just makes that much difference because they know what's happening in the community. They know most of the children. They know what's going on in that child's life. … for the understanding. To break it down for how that child will understand. (Sharon, parent)

> I think one of the strengths around this school is the mix of Indigenous and non-Indigenous and the mix of male and female. There seems to be a really nice balance around that. (Rachel, parent)

Further, parents also emphasised how they saw the local community, its people and resources, as a valuable factor in supporting students to achieve:

> When it comes down to it, it's about how we educate and talk to our children about our values and what we would or would not expect of them, but how we would like to see them go. We can arm them with all the information, but literally it comes back down to their own choices. With this good community, community values, and good parents' values, and just the support, you know, our kids can go a long way. We've got a lot of role models in the community now that have been through and even been at [Seaview Catholic College] and now they are somewhere where our kids can look at them and say, "I want to be like them." … That's what this school is all about. You work for yourself and try to achieve higher than you think you can go. (Phillipa, parent)

Suitable allocation of resources

Teachers and parents described an unbalanced distribution of resources at Seaview, noting strengths in ICT resources, but inadequacies elsewhere. Teachers commented on a need for science and mathematics resources and how this was an obstacle to improving related student learning outcomes. Parents, however, did not seem to be as aware of specific curriculum resourcing needs. Their concerns were more broadly based, related to overall financial or people resources and how these affected student learning. This range of perspectives from the teachers and parents is evident in these comments:

> The kids are happy. Plus they've got the up-to-date technology. Everything's there. State of the art. A Smartboard. (Sharon, parent)

> Science and maths, we've got nothing to use to gain the kids' interest. So they just can't compete with ICT at the moment. (Peter, teacher)

> I think we have something like three or four calculators between 40 kids, so the resourcing is one of the big hurdles as far as science and maths goes. (Mark, teacher)

> One recommendation for education providers, especially to do with us, why change something that worked and provided opportunity not only for Aboriginal children but it also catered for and provided that support for non-Indigenous? And one being the homework centre. … We've actually put it in place because we know our parents want it happening. So we've actually got TAs and teachers giving up their time and not getting paid for it. Previously it was funded. (Debbie, parent)

This parent's dissatisfaction with the allocation of funding, and her confusion with funding decisions made elsewhere that do not recognise that Seaview, is 'different to the city and more developed areas' (Debbie, parent), were also reflected in views held by the teachers of funding decisions made by administrators elsewhere:

> The money we do have sometimes seems to get spent on some confusing things. … they spent a whole lot of money on projects which confused a lot of teachers when we're all sitting in staff meetings going, "But we need to be able to teach these kids. We need money to buy resources." (Peter, teacher)

The teachers also expressed dissatisfaction and confusion with professional development opportunities which they perceived did not meet the challenges of distance and isolation:

> On the other hand you can actually bring people up here. I've seen it happen heaps of times [elsewhere] … people come up and they have PD at the high school. They all share it [all the local schools, government and Catholic]. … or once a month, instead of staff meetings and all that sort of thing, we all just went and talked amongst schools. (Mark, teacher)

School curricula and curricular leadership

ICT was seen as a strength of the school in terms of helping students achieve their potential, and ICT resources have been updated by an enthusiastic ICT support teacher whose curricular leadership has contributed to teacher professional learning and to student learning:

> When I first came here we had no computer specialist and that was what a lot of us really fought for, we need somebody who is computer literate, who knows what they are doing, who can teach us. And we've been lucky enough to get someone. (Peter, teacher)

> … and specialist teachers for computing. And usually they do some of their own PD, just to keep up to date, so it's good. (Debbie, parent)

The students are involved in a range of ICT-related learning experiences. There is an e-club that runs after school, the computer lab is well resourced with 25 machines, and staff and students make regular use of two interactive whiteboards:

> The Smartboards have made a huge difference. Kids love them, teachers love them, kids love using them. Even if it is simple things. It's made a huge difference, and because we now have a Smartboard lesson once a week the kids get more access to what sort of sites are out there, and they want to use it all the time. (Linda, teacher)

Noteworthy here is that when the students were asked what they liked about using ICT they spoke exclusively of using computers at both school and home for playing games and Internet communication. They did not mention the use of ICT in relation to specific curriculum learning activities:

> I like games. Mainly I am on the Internet and mainly sending messages to friends. We have our own password [at school] for email. (Daniel, student)

> … going onto the Internet and playing games. (Alice, student)

When asked about their science and mathematics learning, students spoke about the types of activities they enjoyed doing. The teachers' perceptions of a lack of resources for science and mathematics were not reflected directly in students' comments about their experiences in these curricular areas. Instead they emerged indirectly in evidence. For example, students spoke very positively of particular science activities such as building volcanoes or analysing milk samples, while also noting they seldom did these sorts of activities. Further, with regard to mathematics, they described what they found to be enjoyable, valuable learning activities, and all these activities were based around 'paper' or 'book' resources:

> [I like] maths. 'Cause I like all the sums and everything, and some of the activities we do. … The activity we are doing now is to do with a school project. We have to do travel around Australia. We have to work out kilometres and all that. … I like doing the experiments. But we don't really do science at school. But one of the things we did was test the fat in different types of milk. (Lisa, student)

> I like sports and maths, and last day of school. … I like maths because of the activities … like mental maths and trying to see who has got the most right. (Matthew, student)

> We don't do science very often, but when we do I like volcano things. I don't really like classroom work because you're just sitting there and it just drags on. I like doing stuff. … [In mathematics] what we are doing at the moment is these sheets where we read, and then we have all these sums that we have to work out, … we get to work at our own pace. And with most set work you kind of think, "Oh yeah, I don't want to do this." But if we are given a whole lot and we can work at our own pace, we're like in competition with each other. … And you seem to do more work that way. You get more in the mood for it. (Yvonne, student)

Prominent in all these students' comments is that 'activity' oriented learning experiences are seen by the students as motivating, engaging and valuable to learning.

SANDY COVE PRIMARY SCHOOL

> There is no stimulation. Like they don't see signs, traffic lights, advertising. It is really just the nature of where we are.

Sandy Cove Primary School is in a remote northern coastal community, over 120 kilometres from the nearest town. The Sandy Cove 'community' has a population of about 150, with the school also catering for students who travel from several small Indigenous communities within driving distance. The school caters for K-10 students, most of whom are Indigenous, apart from the principal's children. Officially, the school has over 120 students enrolled but on average the school is attended by 70-80 students at any one time. The first term can reach an attendance of nearly 120 students, but after holiday periods numbers are more typically about 45-60 students. The school currently has ten teachers. There are support programs for ICT, and physical education and health, and there is a Teacher Librarian. Sandy Cove has five Aboriginal Teacher's Aids (ATAs) and a special centre for training them that is well resourced. This was established by a Catholic Sister who had previously worked at the school.

Student transience and the role of the 'community'

A main issue at Sandy Cove affecting student learning was student transience and lack of community involvement in the students' school lives. Attendance and student drift are the major obstacles to students achieving their potential:

> Drifting for students is an issue because students can be related as family, and family groups are important for people here, and they may be related to people throughout the peninsula or throughout the Kimberley. So it is not uncommon for a child to transfer out to a school miles and miles away for different reasons. … students take off and drift back from being away. (Andrew, Principal)

Teachers also noted that learning must take place in the classroom – it will not happen at home where there is generally a lack of academic stimulation or support. Thus, what happens in the community affects the school, as noted by both parents and teachers:

> There are personal community issues that seem to affect kids. Before, there used to be all this support from the community. Now there's business between family groups and that really affects the school. … And it can affect a child's learning. Like some of the kids don't come to school. They stay in the community. Or if they come to school they won't talk to any of the other kids. (Beverly, parent)

> … some kids are just not turning up … often due to issues that are happening in their homes. So they are not coming to school, due to not just us, but other issues. (Andrew, Principal)

Teacher attraction and retention

The four teachers interviewed had all chosen to be at this school for professional reasons. For the principal, it was his first posting as a principal and he was on a three-year contract. The ICT specialist had chosen to be at this school for longer than average, eight years, as he had enjoyed the challenge of working with ICT and the students. He was moving at the end of the year to set up the ICT program at a larger school in a larger town further north. The Teacher Librarian and the Years 5/6/7 teacher were a husband and wife team who had chosen to come to this area from Melbourne for two years after previously enjoying teaching in the Northern Territory. Other teachers who were not interviewed were new teacher graduates from places like Melbourne and Canberra, rather than WA, usually educated at the Australian Catholic University. Most commonly teachers stay for one or two years, but there are teachers who have stayed for much shorter periods, discovering that it was not what they had expected:

> Keep in mind the average is two years, perhaps even less. But some come and go. This year we have had two teachers like that. They come and see that this is not the life for them. They left before the end of the first term. (Andrew, Principal)

> It is a problem. Teachers will come here with very high hopes and think this is fantastic. But it is a different situation when you actually get here. We do get some teachers who stay for some time, like myself. And some very short term, when they suddenly realise what the place is like. They go, maybe after six months. (Kevin, teacher)

This departure of teachers, despite what was described as very good teacher housing and financial incentives, is because of 'culture shock' and the challenges of remote living and teaching:

> The other issues are probably more personal and social rather than educational. Adjusting to the community, adjusting and living. Having to make the adjustment that living in a rural community you have a very small group of people … and it has ramifications not just within the school because it is a small school. Even when you leave school you are still with those people. (Elaine, teacher)

Living environment

Sandy Cove residents, other than the teachers, have long term family connections to the area and a history of returning to the community after absences for schooling or family factors:

> My family is originally from here. ... My parents moved away from here and we lived in Wyndham. So my school years were up there. Then we finally came back as adults. Back to the community. So I've been here for a while. Over ten years now. (Cindy, parent)

> I stay out in a community called [Ridge Gully] about 20 minutes drive. I've been living in Perth and Bunbury. I used to live up here. I went to Perth and got homesick so came back. I will go to Perth to see my family and then come back. (Ryan, student)

> I have lived here all my life except for schooling in Darwin. (Beverly, parent)

> You can go fishing and all that. And it's more friendly. ... But I won't be here next term [for high school]. I am going to Perth [to an Adventist school]. Just me and my sister. (Leanne, student)

Although the parents spoke positively about living in Sandy Cove and said they would continue to live there, they and the teachers noted constraints of the environment that they perceived as a hindrance to students' learning:

> They have a wider variety of opportunities [at other schools] to choose from, whereas here it is limited or nothing at all. (Beverly, parent)

> They have work experience and things like that in the other schools [referring to apprenticeships and other opportunities]. More social things happen in the school too [other schools]. And that helps their learning. (Cindy, parent)

> … I would say the real obstacles are the lack of interaction from the wider community and the fact that there is no stimulation. Like they don't see signs, traffic lights, advertising. It is really just the nature of where we are. (Dan, teacher)

These general perceptions of restricted learning opportunities in Sandy Cove were inter-related to perceptions of what resources were needed to support student learning, whether they be material or people resources.

School resources and professional development

The teachers and parents emphasised the importance of the school creating curriculum learning activities that engage and interest the students and thereby broaden their experiences. To do this, however, requires money and other resources:

> One thing that I would say to the people in charge, whenever I ask for money to take my students for an experience outside of the community, they should jump at it. I have taken a group to Melbourne and we have been on camps, and these are the rich learning experiences. And you can just build your program around it and it is so exciting for them. But then I get so drained trying to raise money for it. I would say that is the one thing that I would like. … We have to provide stimulation. (Dan, teacher)

> I think we should be able to get more resources into our school. Available to us. Or even people that travel round and come in and take classes for different things. More of that sort of thing. So the science teacher is coming round and he could come in for a month or whatever and do that sort of work that other kids are doing in other schools. … A separate classroom for science. And then they can do their experiments and what not. And learn more in that one classroom. Not just being in a room and not having stuff to work with. (Cindy, parent)

Professional development was also something that the teachers and parents noted should be supported by educational providers if they wish to improve student outcomes in science, ICT and mathematics. Similarly to Cindy (parent) above, one teacher suggested that the quality of

professional development opportunities would improve if specialist people were sent to remote communities to help teachers:

> [My recommendation] would have to be for more support and PD … not going to Perth to do it, because you wouldn't drive to Perth for PD, and it is unfair on the people back here who have to do your work. And it is just too expensive for the school. … The PD would have to come here. It is much cheaper to move one person than all of the staff. (Elaine, teacher)

> One of the other things that could attract people is if we get more professionals to come up and actually do a lot more PD. We don't have the PD opportunities that people in the city have because of resources, distance, all those obvious reasons. I think if people were going to come up here and know that they were going to get quality PD that was going to be lifelong for them and career-wise, that would then be a good incentive for them to come up as well. (Andrew, Principal)

Locally created curricula and the integration of ICT

The ICT program running at the school was seen as a strength, as it was used as a motivator for the Indigenous students to attend school, with the laboratory open from 7.30 in the morning. Access to the Internet was an opportunity to open up the world to this remote community that, in the past, was closed due to its overall isolation and flooded roads during the wet season. Computers offer access to the outside world:

> I would recommend that children be given more opportunities and resources, for instance in the IT area. They are highly motivated by things like computers and they are able to work at their own pace. They get instant feedback from them and kids come to school early in the morning because the computer room is open. Anybody would say the best way to engage students is to get stuff that is interesting and if they are engaged then they will learn, so these are highly motivational pieces of resources. They are expensive but they are necessary, and if you look at the world, in particular the big picture communication and computing, and those sorts of skills are what makes everything tick. So without focus on these skills the students are being left behind. They must not be left behind because they are isolated. They must be given opportunities to compete and perform and achieve and be part of what is really happening in the big picture. So isolation should not be an obstacle, particularly in this day and age when you can be connected electronically. (Andrew, Principal)

> That's why the IT and the Internet are extremely good, because you still have access to the wider community. (Dan, teacher)

But, despite the emphasis on the ICT program, there had been inhibiting technical issues:

> I think [my recommendation would be for] better access to communication, so we are not going to have 'drop outs'. Better than the satellite, because with the satellite we still lose out, it drops out. … it's not reliable. (Kevin, teacher)

> [Getting] technical and qualified people for anything to do with computers [is a problem]. If you haven't got someone on staff, the expense to bring someone out to look at the equipment and to get someone out if something is wrong with the network is quite excessive. (Elaine, teacher)

While ICT had been a focus of the school curricula (as well as literacy), science and mathematics were not. As stated by one teacher:

> We have had visits from Scitech and another group from Canberra, a national science body travelling around Australia, has created an interest in science. But beyond that there is nothing happening in this school while I have been here to promote science and maths. Perhaps maths is the forgotten subject here. (Elaine, teacher)

The principal was aware of this issue, following a focus on literacy prior to his commencement at the school. Further, the Years 5/6/7 teacher had been addressing the lack of science curricula with regular science experiment days, and he was looking to buy a software program '*Maths 300'* to attend to the improvement of mathematical skills.

The parents' and students' impressions of the school curricula were in concordance with those of the teachers with regard to the regular use of ICT. Also similar was that they were limited in what they had to say about the effect of science or mathematics learning activities, except to describe a few activities. Parents' and students' perspectives on ICT, science and mathematics in the school are reflected in these comments:

> They are learning a lot of things on computer. Like they can do PowerPoints and things like that. (Cindy, parent)

> Every morning our class goes to the computers. … [I like] maths because it's fun. … Subtraction. Sums. I am good at sums. And some puzzles. … [Science] I like making volcanoes. And on Monday we are going to see how it erupts. (Leanne, student)

CONCLUSIONS

As noted in the Method section of this chapter, an initial finding from these four case studies was that it is essential to consider the holistic and contextual features of regional and remote schools. That is, global aspects of educational contexts can be fundamental to what schools are able to achieve regarding learning outcomes in science, ICT and mathematics. The conclusions outlined here therefore take into account this vital aspect of the case studies.

The key themes and issues from the four school case studies outlined here span a range of aspects concerning teaching in regional and remote schools in WA, including:

- living environment
- professional environment
- nature of community relationships
- student transience
- teacher attraction and teacher retention

- distance and isolation
- curriculum leadership
- teacher content knowledge
- school created curricula
- integration of ICT
- allocation of resources
- teacher professional development.

To some degree, all these key issues were in evidence at each school site, although between sites they sometimes were 'opposite' in nature and their effect upon teachers e.g., the 'desirable' living environment at Bush Junction versus the 'challenging' living environment at Rocky Hill. Again it must be noted that these factors are not independent of one another but instead could be described as an inter-connected web of contextual and educational features of a particular school and its community. For example, student transience and school-created curricula are integrally linked, as are living environment and teacher retention, and also professional development needs and the challenges of distance and isolation.

The issues can be viewed as being predominantly direct or predominantly indirect influences upon student learning outcomes in science, ICT and mathematics (see Table 3). However, as made explicit by the interviewees in their comments and recommendations, indirect influences are not necessarily of lesser importance because they are often pre-requisite to being able to develop and use factors that are direct influences. For example, student transience needs to be addressed; that is, students need to be attending school before teachers can provide appropriate learning experiences for science, ICT and mathematics. One way this is addressed by the schools is through locally created curricula designed to motivate and engage the students. Hence, the factors become inter-connected and mutually influential upon one another.

Table 3. Teacher-related indirect and direct factors affecting student learning

Indirect influences	Direct influences
• Living environment (including housing) • Nature of community relationships • Student transience • Teacher attraction and retention • Distance and isolation	• Professional environment • Curriculum leadership • Teacher content knowledge • School created curricula • Integration of ICT • Allocation of resources • Teacher professional development

Overall, the factors that emerged with strong commonalities across the four case studies lead to the following assertions:

Assertions related to indirect influences:

- The living environment has a major effect upon the attraction and retention of teachers to regional and remote schools, with the quality of housing of particular importance. Aspects of living within a small community are also of importance in that they impinge upon one's daily lifestyle.
- The nature of the community and the school's relationship with the community have a major effect upon what schools can achieve in relation to attendance and the students' valuing of education.

- The attraction and retention of teachers is a complex issue in that many factors play important roles, including the quality of the living environment, professional support, personal support for the challenges of living in a small community, the challenges and rewards of teaching in a regional or remote school, and the challenges of distance and isolation both professionally and personally.

Assertions related to direct influences:

- ICT is vital to schools and teachers. It is used to motivate students to attend school and to engage in stimulating and relevant learning activities. It provides learning resources, activities and opportunities that would otherwise not be available to students living in regional and remote locations. Schools need to be provided with suitable resources to enable these learning activities to happen.
- School-created curricula, developed within the context of the varying needs of the student cohorts, allow teachers to provide learning opportunities designed to improve student outcomes in science, ICT and mathematics.
- Curriculum leadership can play a vital role in school professional development through support of content knowledge development and related skills, through resource support, and through professional encouragement and modelling.
- Professional development for teachers in regional and remote schools is lacking because teachers do not have easy access to 'people' resources such as workshops or mentoring in an ongoing, interactive way. Professional development needs to be in context, and in this regard needs to be brought on-site – to the teachers at the schools. Schools in regional and remote locations need to be allocated additional professional development funding and related resources if professional development is to happen in a productive way.

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