Peer Tutoring and Mentoring

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Project Title	Peer Tutoring and Mentoring in Science for Indigenous and Non-Indigenous Students in Darwin
Project Team	Dr Phil Keys (SiMERR NT)
Period	September 2005 - May 2007
Funding Agency	Australian Schools Innovations in Science, Technology and Mathematics (ASISTM – Round 1)
Organisational Base	SiMERR NT

Description

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This study investigated the impact of an Australian Innovation in Science, Technology and Mathematics (ASISTM) project that sought to improve students' attitudes towards science by employing tertiary science students from a regional university to work as peer tutors in middle years science classes. Over an 18-month period four schools, ten teachers and their classes participated in the program. A tertiary science student was assigned to each of the classes and supported the teaching and learning of science within the classroom. The study made use of a mixed methodology. The qualitative data were compared with a quantitative instrument that measured the students' attitudes towards science known as the Test of Science –Related Attitudes (TOSRA).

The research investigated the influence of early career scientists - ECS had on students and teacher practice and the partnership of the program between schools and the university. The research sought to answer four questions:

1. What influence did the early career scientists have on students' attitudes towards science?

2. In what way has the introduction of an ECS working as a peer tutor/mentor in a science class influenced the teachers' practice?

3. What is the role of early career scientists in the science classroom and what strategies did the teachers find useful in facilitating that role?

4. How do we develop and sustain effective partnership between schools and universities?

Participants

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Four schools—one government and three non-government schools, two teachers from each of these schools; and, a university mentoring program that recruited 25 early career scientists (ECSs).

Findings

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The results of the study revealed that the tutor had impacted on the students': understanding of science; interest in science; understanding of a scientist; and, future career choices.

What influence did the early career scientists have on students' attitudes towards science?

The students' expressed a confidence in meeting the challenge to learn scientific concepts because of the influence of the ECS. They viewed the ECS as an expert who could explain scientific concepts and at the same time, because of their age, were perceived as non-threatening. The ECS played a major role in challenging students' perceptions of a scientist. The students found that the ECSs were normal people not unlike themselves.

The students made a clear distinction between science being interesting and fun. The students revealed that science could become more interesting and longer boring because the ECS assisted their understanding of the scientific concepts. Science would never equate to fun in comparison to other interests such as sport or music.

When considering science as a career the ECS was influencing students' future career choices but not just in science. The ECS proved to be a catalyst of thought, a reference point for the young students to consider the possibility of achieving a profession.

The results of this study indicate that science just needs to be interesting, and better understood not fun. Educators are sometimes too overly concerned with making science fun without realising that it just needs to be understandable and intellectually challenging. This study has demonstrated that an early career scientists encourages a productive learning environment that stimulates students' interest in science, provides an understanding of science and scientist; and encourages students to consider future career choices.

In what way has the introduction of an ECS working as a peer tutor/mentor in a science class influenced the teachers' practice?

The findings consistently revealed that teachers modified their teaching practice and drew upon the ECS's expert knowledge in shaping their own pedagogical practice.

The ECSs' became a catalyst for change and not just another pair of hands. They shared a similar passion but not the same vocation, and influenced teachers' practice. The early career scientists – ECSs had a positive influence on the teachers' practice.

What is the role of early career scientists in the science classroom and what strategies did the teachers find useful in facilitating that role?

The teachers were able to define and differentiate the role of the ECS with that of a teacher aide. The teachers were also successful in identifying useful strategies that would facilitate and sustain that role.

How do we develop and sustain effective partnership between schools and universities?

To move forward into partnership effective strategies need to be identified for empowering teachers. There needs to be a cultural paradigm shift within the school community that recognises teachers as more than just classroom operatives. Teachers need to be encouraged to be initiators and leaders of partnerships outside the confines of their immediate classroom and recognised for their efforts. The future of partnership between school and university is embedded in the empowerment of the teachers.

Outcomes

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- Keys, (2008). Empowering teachers in school and university partnership. Learning Communities: International Journal of Learning in Social Contexts.
- Keys, (2008). Trainee scientists influencing teacher practice in science classes. Proceedings of the Paris International Conference on Education, Economy and Society. Paris.
- Keys, (in press for Aug edition 2008). The role of an early career scientist working in the science classroom. Teaching Science.
- Keys, (2008 November). Early career scientists influencing students' attitudes towards science. Paper to be presented at the New Zealand Association for Research in Education, Palmerston North, New Zealand.

Impact

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There are growing number of science programs in Australia that use the role model concept of mentoring science programs in schools that are designed to encourage students in science. Within Australia there are at least 300 tertiary science students involved in high school peer mentoring university based programs (STAR, 2008).

Whilst these programs provide anecdotal evidence that mentoring and role-model programs have a positive influence on students' attitudes towards science no formal research was found to document these claims. The findings of this research support the anecdotal evidence that science role model in the classroom has a positive influence on students' attitudes towards science and influences teachers' classroom practice.

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