

CHAPTER ONE

EDUCATIONAL RESEARCH: PARTNERSHIPS, INITIATIVES AND PEDAGOGY

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ORIGINS OF THE EDITED COLLECTION

We are pleased to present the Edited Collection for 2004. The volume brings together nine research studies conducted by higher degree students in Central Queensland University's Faculty of Education & Creative Arts. The 2004 edition is the fifth in a series begun by Bruce Knight and Leonie Rowan in 2000 and the papers in this year's collection represent some of the many research projects supported by the faculty. The Edited Collection has two purposes and benefits: it provides an authentic platform for research students to publish their results and discuss their theories, and it provides a refereed forum where students can submit their work to anonymous review and receive constructive feedback on their thinking and writing. We believe that such a forum and collection enhances the trustworthiness of research conducted in the Faculty (Denzin & Lincoln, 1994).

Educational research is important because it informs teaching and learning at every level of modern society. Education now exceeds the definitions placed on it just a decade ago. For instance, the Faculty of Education & Creative Arts at CQU now educates pre- and in-service teachers, education professionals and administrators, business people, adults, and people who work in creative enterprises like music, theatre and recreation. Faculty research students, therefore study teaching, learning and knowledge generation across all these levels resulting in chapters of many interests, flavours and colours. This diversity is both a challenge and a resource because it tests our understanding of learning and exposes students and their teachers to multiple theories, frameworks, lenses, and dispositions on knowledge.

In its more traditional form, education research explores the nature of schools, classrooms and individual learning experiences. Research is the lifeblood of innovation in teaching and informs policy decisions taken by schools and government and independent jurisdictions. As a result, education research is interested in every facet of schooling and learning and this collection presents a rich and diverse set of studies. The studies are sometimes difficult to categorise because they range from pilot studies through condensed thesis chapters to post-doctoral studies; still, some theoretical and instrumental threads are evident as we analyse the nine contributions. Most of the chapters focus on the traditional domain;

however, in Chapter 10 Lynch & Smith stretch the traditional mould into the workplace of creative enterprises and propose new ways of dealing with old problems.

This overview of the Edited Collection now presents one way of viewing the 2004 contributions. The ten chapters are arranged according to their principal subject. They could have been equally well arranged according to methodology or philosophy. Every order will be subjective in some way, therefore, we present the chapters in this order and hope you will enjoy reading about the theories, results and discussions that follow.

OVERVIEW

The first theme explored in the next four chapters of this book relate to science education. Three of these chapters report and discuss middle school or senior school professional development. First, Teresa Moore explores teacher in-service education in her chapter, *Floating and sinking: Constructing the "good science teacher"*. Recent science teaching reports (e.g., Goodrum, Hackling & Rennie, 2001) criticise science teaching in schools and recommend in-service education as a way to redress deficiencies in science teaching and learning. Consequently, Moore describes and analyses a high school's experience with university supported unit design and implementation. Using discourse analysis of jurisdiction, policy and syllabus documents and teacher interviews, she argues that many intersecting factors contribute to our notion of the "good science teacher". The factors include teachers' ways of thinking and speaking about content and pedagogy, school and social expectations, institutional discourses and power relations. Thus, there are many demands on teachers; some of which support and others contradict the teacher's own and communal understandings of good teaching. Moore concludes that education discussions in which teachers cooperatively negotiate and build new courses can enhance their pedagogical content knowledge (PCK). She also found that convergent professional development reinforces teams and partnerships and enhances the professional image of science teachers.

This brings us to chapter 3, *The tyranny of the textbook: Despite a new syllabus the science textbook still dominates teacher planning and pedagogy* by Reyna Zipf and Allan Harrison. School-based professional development can yield different outcomes to those described above when the science teachers do not share common education aims and understandings. Zipf and Harrison show that when teachers hold opposing views of the nature of science and teaching, planned outcomes can be severely compromised. This chapter is a case study of the planning, writing and implementation of a new Year 8 science unit: *Life and living - the terrarium unit*. The difference between this unit and the one studied by Moore was this school's teachers' preoccupation with the science textbook. The interactions between two proactive teachers who held opposing philosophies of education – one positivist, one constructivist – dominate

the report. In summary, the senior proactive teacher imposed her positivist views on her colleague and the science staff, limiting the inquiry experiences of the students. A teaching impasse arose because the choice of a new textbook was concomitant with the design of the new unit and the textbook did not support the inquiry intent of the planned unit of work. The textbook so dominated the teaching that content became the learning focus and factual recall dominated assessment. The case study method credibly identified and elucidated the tensions in teaching and the school's reversion to content-driven curriculum. Zipf and Harrison point out that shared understandings of the nature of science are essential for inquiry-based science teaching to succeed.

Chapter 4 also has a teacher professional development focus. In this chapter, Jan Bulman, Colin Greensill and Allan Harrison report and discuss the outcomes of *A preliminary study of university physics for secondary science teachers: Will content be enough?* Education Queensland and Federal agencies have documented the continuing decline in the number of qualified science teachers teaching science in secondary schools. Senior physics has a chronic shortage of qualified teachers; therefore, Education Queensland and Central Queensland University customised a physics course for experienced teachers who wanted to begin teaching physics or felt underqualified. Nineteen teachers self-selected the 16-week course and Bulman tracked the interest and progress of participants while attending to two Research Questions: 1) Was the mode of course delivery optimal for working teachers? and 2) What was the effect of this course on teachers' Pedagogical Content Knowledge (PCK).

Case study methods generated qualitative data throughout the course and the data were phenomenologically interpreted to construct outcomes and recommendations. Results indicated that the teachers were stimulated by the challenge of university study, benefited from the emphasis on senior school physics content, but found the pace too intense. Teachers with physics classes stated that the course enhanced their science teaching confidence. A downside was the reluctance of schools to provide matching funds and/or time release; consequently, future reward and recognition will be needed if teachers are to continue to give their time and energy to continuing professional development (CPD). A final comment relates to the course's concentration on content; current studies recommend amalgamating content with pedagogy in order to enhance teachers PCK and so develop the whole teacher through CPD.

The final science education chapter is John Hunt and Allan Harrison's *ICT-mediated science inquiry: A pilot study*. Hunt's remote access electron microscopy project (RAMP) brings state-of-the-art science experiences to rural primary schools in Queensland. This is a significant innovation in any primary school and is especially important in rural Australia. The study reports the pedagogical processes that used current communication

technologies to enhance the teaching and learning of science. The implementation engaged learners aged from 9 to 13 years in Queensland public schools in a series of synchronous electron microscopy sessions delivered from the University of Queensland. Learners interacted synchronously with an inter-disciplinary team of scientists and science educators with the learners acting as 'co-researchers' by presenting their pre-lesson research knowledge and questions to the expert science team prior to the live session. This pre-lesson learner-research was the basis of a 'script' for the live intervention. The events and the script are phenomenologically analysed to describe student outcomes and session problems. Hunt and Harrison were able to confirm that student-learner knowledge, understanding, interest and attitudes were enhanced by this innovative combination of technologies and practice. In a similar manner, there is strong evidence that there has been change in teacher knowledge and understanding and confidence to teach science. It is important to note that this was a pilot study for a broad-based implementation of RAMP activities across the state in 2005-2006.

Lois Irvin uses the phenomenographic approach in Chapter 6 to explore the relationship between policy and practice within the Queensland context in relation to student engagement in learning. Irvin argues that the concept of engagement is often promoted as a solution to certain educational issues such as student alienation and early schooling. This paper maps the various ways in which the concept of engagement has been used in the last three decades in educational research in order to demonstrate the lack of consensus of what it means for a student to be engaged. Irvin also argues that this lack of a shared understanding of what it means to engage a student in learning impacts on Queensland teachers who are expected to implement these reforms centred on engagement. The focus of the chapter becomes centred on exploring answers to the question: What are the qualitatively different ways which Education Queensland secondary school teachers construct and measure student engagement in their own teaching practise? Phenomenography is used by Irvin to help "graph" the differing perspectives, conceptions and understandings of engagement held by practising teachers". This chapter alerts the reader to a current study being undertaken by Irvin of approximately 25 Central Queensland secondary school teachers in order to "identify teachers' different conceptions of engagement and the correspondingly different ways teachers attempt to engage students in their schools to meet current policy objectives".

In Chapter 7, Cecily Knight and Bruce Knight report the results of an Australian study of how teachers include students with special needs in their classrooms. The research was undertaken in response to the widespread acceptance of the philosophy of inclusion and the lack of research evidence of the effectiveness of inclusive practices. In this qualitative study, a purposive sample outlined the experiences of 42

teachers to discuss the challenges of inclusion, the impact on students' skills and social relationships, and the effects of the process on all of the major stakeholders involved. Content analysis was used to analyse data according to manifest content which provided a means for identifying, organising and retrieving the data. The results of the study offer suggestions to teachers of the practicalities of including students with special needs.

The central argument of Chapter 8 is that the world has changed. Bernadette Walker-Gibbs argues that the ways in which we have traditionally established our understandings of the world have proven to be inadequate for contemporary education systems in the context of a postmodern world where there is a saturation of media and visual images. Jean Baudrillard's concepts of simulacra, hyperreality and implosion, and seduction are used to construct a post-Literacy framework that is linked to a reconceptualising of generation, culture, knowledge and power within formal educational contexts. In order to contextualise these arguments Walker-Gibbs outlines a research project that was centred around research partnerships between schooling and university communities in order to broaden the participants' conceptions of how children engage with media in a futures oriented world. The research also explored how the concept of *Learning Initiatives* could provide a framework for integrating the curriculum, pedagogy, policy and practice of e-learning, media studies and futures driven discourses between the school, the university and the wider community.

Paul O'Neill investigates digital learning objects in Chapter 9 "as components of 'instructional design' or 'instructional technology' and examines how they are providing new opportunities for teaching and learning". Using a constructivist framework O'Neill argues that by taking advantage of the potentiality of digital learning objects educators have at their disposal a unique tool that can be used support learners in a constructive, self directed framework that extends and refines the knowledge that the learning object or sequence of objects intends to achieve. O'Neill reinforces this argument by outlining the example of The Schools Online Content Curriculum Initiative (SOCCI), a multi-national project that links all of the education departments across two countries through a central body called The Le@rning Federation. The conclusions that are made in this chapter are that learning objects may provide opportunities not possible prior to the invention of these instructional technology devices. O'Neill cautions however that despite the potential of learning objects that as with most classroom practice the "achievement of the learning outcomes remains heavily dependent on the pedagogy that supports the learning experiences rather than the function and role the learning object plays".

David Lynch and Richard Smith argue in Chapter 10 for a re-assessment of teaching and ultimately schooling itself. The emergence of the knowledge

economy is used to explore and analyse the "impact of rapid and deep social change on teaching, schooling and by association, teacher education. The impact of technology, change, mass casualisation of the work force is used to illustrate the view that teachers are instrumental in helping students respond to the knowledge economy. The concept of learning management is used by Lynch and Smith to outline a design-based construct at the core of the Bachelor of Learning Management at Central Queensland University, that has an emphasis on 'pedagogical strategies rather than curriculum development. A case study based on the Noosa Campus of Central Queensland University emphasises partnerships that are necessary to ensure links between theory and practice.

In Chapter 11, Gopal K Bhattacharya addresses the issue of Education and Training for decent work in terms of access and equity. The debates on globalization are used to focus Bhattacharya's aim of embracing the issues concerning education and training. The discussions in this chapter focus on how education and training can assist in harnessing the benefits of globalization and promote employment whilst also remaining cognizant of equity and access in order to "ensure provision of decent work and its attendant benefits to the society". Bhattacharya outlines the challenges of determining who has access to the global, information technology focused economies and ensuring that there is a more 'equitable' distribution of the benefits of this type of economy. This chapter highlights some of the dilemmas that surface while factoring in the access and equity considerations in education and training for promoting decent work in order to make these systems more efficient and effective whilst recognising that they may lack the capacity to address the relevant issues appropriately. Bhattacharya uses this chapter as a means of exploring these issues in order to try to as he puts it "reconcile the irreconcilable" by making the argument that the "solution may lie in striving for an education and training system which not only ensures equality of educational opportunities resulting in equality of outcomes and encourages individual capacities and competences to flower but also provides for an environment that supports development of these capacities and competences even where they seemingly do not exist in the first place".

CONCLUSION

A strong commitment to publishing quality research unites the papers in this collection. The underlying issues addressed in this years collection is related to the exploration of *partnerships* between the researcher and researched, industry, schooling and higher education; *initiatives* that seek to understand, improve and analyse *pedagogy* in order to achieve a greater comprehension of some of the key themes arising for educational researchers in an increasingly futures focused world

We trust that the research discussed stimulates discussion and debate.

REFERENCE

Denzin, N.K., & Lincoln, Y.S. (1994). Introduction: Entering the field of qualitative research. In N.K. Denzin & Y.S. Lincoln (Eds.). *Handbook of qualitative research*. (pp. 6-24). Thousand Oaks, CA: Sage Publications.