

# **Parallels of Lived Experiences in Learning: A Scientist Learning Qualitative Research and Nurses Learning Science<sup>1</sup>**

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## **Abstract**

This article documents my personal experiences in entering research in tertiary teaching and learning. My role as a science academic has included teaching both undergraduate science and nursing students, as well as incorporating scientific research in the discipline of microbiology. Through teaching these two different cohorts of students I have come to realise that they demand different teaching styles and strategies. Previous studies concerning science courses in nursing programs suggested that nursing students have a negative attitude towards the relevance of science in nursing and lack the confidence to study this subject. In an attempt to improve this situation, I have taken the approach of investigating my teaching and learning practices in nurse education by undertaking a comprehensive evaluation of the course, and in doing so I have become more open to learning about new teaching and learning activities. This shift in research experience, from laboratory-based to educational, has produced an interesting parallel. The new experiences and anxieties that I faced in entering a new paradigm of educational research can be seen as analogous to those experienced by my nursing students when studying science in nursing for the first time. This paper provides a personal account of this shift in research and reflects on how my lived experience of entering a new field of research has facilitated the way that I understand how students learn.

## **Introduction**

Teaching science to nursing students presents many challenges. There have been a number of published articles addressing the teaching and learning of sciences in nursing (Courtenay, 1991; Glaister, Davis, Tulloch & Piercey, 1998; Wharrad, Allcock & Chapple, 1994). Studies have considered such issues as student perception (Jordan, Davies & Green, 1999), comparative difficulty (Caon & Treagust, 1993) and attitude to learning (Thornton, 1997) and in general show that the sciences have been taught in a haphazard fashion and suggest that students have a poor attitude towards the relevance of sciences to nursing. Many of the studies suggest that this situation could be improved by a more positive approach being taken in the teaching of science courses and that a more integrated approach is required in the teaching of science courses for nursing education.

As educators we are faced with the challenge of reviewing our current practice. In an attempt to improve my teaching and learning in a science course in nursing, I have implemented a comprehensive evaluation of the course and in doing so have started

research into a new field of enquiry which is distinct from my previous research practices. Exploring this experience has provided me with an awareness of the challenges that nursing students face when learning a discipline which is foreign to many of them. Phenomenological pedagogy specifically considers the various lived experiences of educational life and provides a means for educators to find new meaning in their pedagogy (Mostert, 2004; van Manen, 1997).

The recent opportunity to study as a student and to undertake research in a new discipline has prompted me to analyse my own lived experience and interpret it to help me discover the way that students learn. This paper sets out to describe the phenomenon of students entering into a new branch of study distinct from their own by paralleling their experiences with my own learning experience – namely, that of undertaking research in teaching and learning for the first time. It explores how a change in research focus has provided me with an awareness of the analysis of my personal pedagogies and has made a considerable contribution to professional development.

### **Exploring the Teaching and Research Context**

#### *The teaching perspective: The challenges of teaching science to nursing students*

My academic duties include teaching undergraduate science courses to both students enrolled in science and nursing programs. Many of the students who enter the science programs do so with a reasonable background in science and have a good aptitude and attitude for the sciences. My overall aim in teaching science students is gearing students to be scientists – that is, practising research and the scientific method. Getting students to think and act like real scientists is one of my most important instructional objectives as a university lecturer.

By contrast, nursing students who begin their nursing program in many instances do not have a substantial background in science, yet are required to undertake study in the biosciences as part of the curriculum. I teach first year nursing students a foundation science course which comprises four modules: physics, chemistry, biochemistry and microbiology/immunology. Although much of the content is concepts-based, my main aim is to make it relevant by linking the modules with the functioning of the healthy human body.

A large majority of nursing students enter this course without any prior senior high school science knowledge. This is compounded by the fact that many of these students left school at the end of Year 10 and have been absent from secondary education for perhaps 10 years or more. The student cohort consists of a large majority of mature age learners. For the 2007 intake there was a total of 235 enrolments, of whom 44% were between the ages of 18 and 21. Of the 56% considered 'mature age' (i.e., older than 22 in this context), approximately half were above the age of 30 (USQ Faculty of Science Administration, personal communication, 2007). For these reasons, this course is seen by many to be quite difficult within the nursing program. In previous offerings students have commented that they have found the course overwhelming and a little dry. The negative attitude that some students feel can create a significant obstacle to readiness to learn, and their lack of enthusiasm and endeavour to know make teaching nursing students challenging.

*The research perspective: From the lab to an introduction to educational research*

My research interests to date have been science-based, where the main task has been to make discoveries about nature and interpret them. This type of research is largely quantitative in nature and basically uses the scientific method as a means of discovering knowledge, where

...theory is used to develop hypotheses, relationships among variables are examined through carefully controlled experimental or quasi-experimental methods, numerical data are analysed, hypotheses are confirmed or disproved through deduction, established facts are used to predict, data represent a specific population and results are generalizable to that population. (Brewer, 2001; Coll & Chapman 2000; Cousins, 2002, as cited in Imel, Kerka & Wonacott, 2002, p. 4)

Recently, I have developed research interests in learning and pedagogy in parallel with my more specific research interests in microbiology. My interest in research into teaching and learning has grown gradually out of my curiosity in discovering how to understand better how students learn, particularly nursing students undertaking the foundation science course. A recent change in USQ's nursing curriculum resulted in the redevelopment of the bioscience course and prompted me to begin a comprehensive cycle of planning, preparation and evaluation of this course. The evaluation consisted of a series of questionnaires which investigated various aspects of students learning. The first questionnaire aimed at gauging nursing students' perceptions of their own scientific knowledge and confidence prior to starting the course. The aim of this questionnaire was to obtain information about students' preliminary perceptions of the course, thereby providing an insight into their anxiety about and fears of studying science. The subsequent surveys involved questions relating to the individual course modules of physics, chemistry, biochemistry and microbiology/immunology and an end-of-course questionnaire. The module questionnaires were administered throughout the semester after the completion of each module, forming an important source of ongoing evaluation to gauge students' observations of each module. The most important criterion in constructing the questionnaires was whether information that is useful and congruent with what is known about good teaching, good course design and student learning could be gleaned. On the basis of this criterion, the closed questions were grouped according to the following six categories:

1. module/course design, structure and presentation
2. resources and module/course materials
3. module/course assessment and feedback
4. module/course workload
5. tutorial learning experience
6. perceptions of the module/course and students' own learning.

In the individual module questionnaires and end-of-course questionnaire, students were asked to rate their agreement according to a five point Likert-type scale (1 = strongly disagree to 5 = strongly agree). In addition to this, the end-of-course questionnaire contained four open-ended questions to capture students' opinions in their own words. These questions were included to provide useful information for evaluating closed questions. The results of the surveys are currently being retrieved and analysed.

The development of this questionnaire and the subsequent analysis of results and reporting have led to a shift from my previous research experience to one that was quite new to me. Although I have formal qualifications in tertiary teaching and learning, I had yet to explore the research aspect of this discipline and was faced with entering a new paradigm, that of qualitative research. I found that there were two main challenges with this approach, the first of which was grasping the different methodology. In comparison with quantitative methods, qualitative design often ...evolves during the research; interpretive analysis is applied to narrative data; meanings are sought in specific social/cultural contexts with the possibility of theoretical generalization; and research strategies aim to uncover relations among phenomena, inductively discovering theory out of categories that emerge from research... (Imel, Kerka & Wonacott, 2002, p. 4)

Secondly, I found the language and style used in reporting the research to be quite different. Until recently I have been engaged in scientific experimentation where reporting is a formal process that is usually written in the third person and data are displayed in tables and graphs. This contrasts with qualitative research, where "...reports use informal, expressive language, metaphor, and narrative. The voices of researchers and participants are evident: 'at the heart of qualitative research, the authentic voice of the study's participants must be represented'..." (Imel, Kerka & Wonacott, 2002, p. 4).

As I embarked on this research, I started to reflect on my own experiences as a learner in a new field and started to relate this to the nursing students studying science and asked myself the question: "Could these challenges and anxieties that I feel presently be the same as those that my nursing students face in studying science?" Upon reflection, I found that the situation could be considered quite similar in that these students are learning a new discipline which is quite foreign to and different from their previous thought patterns. My experience as a novice in this type of research, together with the uncertainty of the experience, gave me an insight as to how students must feel when studying unfamiliar material.

### **What Did My Lived Experience Reveal? – Using Phenomenology in the Research Context**

In drawing parallels of nursing students' learning experiences with my own learning experience in a new field of research, I discovered inadvertently that I was using phenomenology, a research approach that I was not accustomed to as an experimental scientist. Since these initial reflections I have investigated the notion of using lived experiences as a means of improving learning and teaching. Studies by Mann (2003), Geelan and Taylor (2001), Mostert (2004), McLeod (2001) and Loughran and Gunstone (1996) document experiences analogous to mine. "A phenomenological study focuses on the essence or structure of an experience" (Merriam, 2002, p. 7) and is a philosophical perspective, a "reflective discipline" (van Manen, 1997). In a review of different phenomenological approaches, Dowling (2007, p. 131) notes that "...phenomenology has become a dominant means in the pursuit of knowledge development in nursing, and presents 'credible displays of living knowledge for nursing'...".

Interpreting lived experiences is at the heart of phenomenology, where all lived experience has meaning.

Making something of text or lived experience by interpreting its meaning is more accurately a process of insightful invention, discovery or disclosure – grasping and formulating a thematic understanding is not a rule-bound process but a free act of ‘seeing’ meaning.....Phenomenological themes may be understood as structures of experience. (van Manen, 1997, p. 79)

In interpreting my own lived experience, I have uncovered an underlying theme of the types of difficulties and anxieties encountered when entering a discipline outside one’s previous experience. Phenomenology has provided access for me into my lived experience as a novice in a new area of research and in doing so it has provided a means to reflect critically on what difficulties and anxieties nursing students must be encountering when studying science for the first time.

My own experience has revealed that learning should be a lived process. It has shown me that an effective teacher not only teaches but also shows how to learn by living a life of learning, which includes a willingness to learn how best to teach and learn. By identifying my own fears and anxieties in entering a new research paradigm, I have been more able to make allowances for individuals and be more patient, positive and encouraging. I have become aware that we need to learn about learning from both the perspective of the learner and that of the teacher and this has made me more conscious of helping students learn the things that matter. In exploring a discipline that was challenging, I gained a new meaning of teaching and learning by experiencing first hand some of the issues that face students, and as such it has enabled me to be more in touch with students’ needs. In essence, I have become more aware of the process of learning rather than teaching.

### **Impact on Teaching Practices**

So how has my lived experience in learning influenced my teaching practices? Essentially, it has helped me self-evaluate and ask questions such as: “What am I teaching and why am I teaching it?” It has made me more aware of seeing science teaching from an individual student’s perspective and made me reflect on what is important for the student. This was particularly important in evaluating my teaching and learning in the nursing bioscience course.

Coming from a non-nursing background, I tended to teach the bioscience course from a rather discipline-based approach. The teaching methods include lectures and tutorials along with self-directed learning in the form of problems and questions which students complete on their own to a large extent. Owing to my fairly didactic approach to teaching, I have found that many students simply memorise the concepts then forget or fail to apply or integrate knowledge which can in turn result in a resistance to further learning. Throughout the last semester I have been conscious of linking science facts with nursing applications, asking the question “How does this relate to the nursing context?”, and as a result I have observed a distinct change in students’ attitudes and willingness to learn. My expectations have changed also – I’ve found that I’m tending not to teach content as much but instead trying to find evidence of day-to-day science that exists in the nursing context as much as possible. I noticed that I placed more emphasis on students understanding concepts in ‘everyday’ terms with which they were familiar but still continued to use scientific terms. It is quite easy to take for granted that students understand particular terms, particularly when I also teach science students at a higher level. However, I made a

conscious effort to explain all terms fully, calling on my own experiences of how the 'newness' of a discipline can be quite daunting. In my recent studies in tertiary teaching and learning, I was always looking at how I could apply learning theories to everyday teaching, making me more conscious of what it must be like for nursing students to connect science theory with practice.

My recent experience in undertaking formal study has also revealed to me first hand the differences between mature age learners and school-leavers, particularly the importance of students' prior knowledge or life experiences in the learning process. It is important for the facilitator to recognise and build on learners' life experiences, to help link new knowledge to previous and to view mistakes as learning opportunities (Knowles, 1990). During lectures I try to use many analogies from everyday life when explaining a scientific principle and as a result I have found better ways to explain things, new ways to phrase things and new analogies to engage students to enable them to understand the material.

I have found that students construct their own interpretations of experiences and that personal interpretation is determined largely by existing beliefs. These beliefs that students hold about scientific principles and natural phenomena frequently differ from my own established scientific beliefs. From past experiences, students are often slow or reluctant to change their beliefs and that it is only through repeated experiences that they usually accept the interpretation. I have specifically integrated lectures with tutorials and self-directed study in the bioscience nursing course with the result of supporting their learning and connection of material, thus helping students to 'accept' the new beliefs and interpretations. Part of this change in belief is a change in students' attitude to learning about science in nursing. As previously mentioned, the negative attitude that some students feel can create a significant obstacle to readiness to learn. Indeed, LePine, LePine and Jackson (2004) have found that an ambiguous and negative learning environment can act as "hindrance stress", impeding motivation to learn. I felt similar sentiments of uncertainty when embarking on qualitative research initially but realised that a change in perspective would help in the acceptance of the changes in thought patterns and found myself asking the questions: "Why was I doing this and how was it benefiting me by taking part in it?" Indeed, the ability of some researchers to adopt the perspective needed for qualitative research relates to the "psychological attributes of the researcher" (Nasser, 2001, p. 103). I started to reflect how I could change nursing students' attitudes to studying science by asking the same questions of my students. I became cognitively aware of letting students know the importance of why they were studying the concepts and at the same time of the need not to confuse them with material that was inconsequential to their studies. This, in time, will hopefully change their perspective on the subject.

Having to teach a diverse audience which incorporates both science and nursing students has brought about many challenges. In developing this changed personal pedagogy, I have found that it has not only benefited nursing students but also indirectly filtered into my science teaching, particularly when addressing different learning styles. Not only do I teach science students to acquire an appreciation of the content of the discipline and the nature of scientific research but I have been able to adapt and modify my science instruction to their particular needs and aptitudes.

I write this article at the completion of the first offering of the modified bioscience nursing course and have scanned through some of the open-ended questions on surveys that I devised at the start of the year. Some of the initial responses show that, although students are still finding the course difficult with respect to content, they comment that they indeed saw the relevance of the course to their professional needs and that they "...enjoyed it...". This gives me a sense that the approach that I have taken has actually helped them in changing their attitudes to learning.

## **Conclusion**

This study has provided evidence that the articulation and ongoing analysis of personal practice have made a useful contribution to my professional development as a tertiary science educator. The purpose of phenomenology is to teach us something profound about our pedagogical self through self-reflective thoughts. Through analysis of my lived experience using reflection and interpretation, I have been able to redefine my personal pedagogical practices in terms of science teaching and learning. By being able to adapt and modify my science instruction, I have been able to change my personal approach to teaching nursing students to meet their particular needs and aptitudes more effectively.

The ability to understand my lived experience of entering a new field of research has facilitated the way that I understand how students learn. I have gained an insight into the problems that they face in studying science and consequently have become more sympathetic to and aware of the difficulties they face. My experience in qualitative research has become a vehicle for the development of awareness and it has provided evidence of my commitment to improving the way that I work with students through reflective practice. Interpretation of my lived experience has been an effective approach to improving how I go about teaching science to nursing students as I have become more conscious of and reflective about the nature of teaching.

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