This paper provides an overview of changes in students' conceptions of teaching and learning in the course of one semester in a new Education Studies unit within an undergraduate primary teacher education program.

In response to concerns that teacher education programs commonly result in students replicating the teaching behaviours they have experienced themselves, this unit aimed to change students' conceptions of teaching and learning. The Bachelor of Arts (Education) degree course has no school based component in the first year so the unit focused on using students' personal experiences as a learner as the basis for exploring and challenging their views of learning and teaching. Based on constructivist principles the unit sought to encourage students to reflect on their own experiences and develop alternative views of learning and teaching. The changes in students' conceptions of learning and teaching over the course of the semester will be discussed.

Introduction

The field of conceptions of learning assumes that learners' actions are guided by their beliefs about what constitutes learning. Research has identified that individuals view the phenomenon of learning in qualitatively different ways. Säljö (1979) identified five different conceptions of learning held by university level students. These consisted of: learning as increasing one's knowledge; learning as memorising and reproducing; learning as applying/acquisition of facts which can be used when required; learning as understanding or abstracting meaning; and learning as seeing things in a different way or an interpretive process aimed at understanding reality. Marton, Dall Alba and Beatty (1993) identified a sixth conception: Learning as changing as a person. Pramling's (1982) investigation of the ways in which young children conceptualise learning introduced the idea of a what and how component of learning which is also described by Marton et al.
The first three conceptions of learning are restrictive because a student who conceives learning to be nothing more than a quantitative increase in knowledge will have difficulty in adopting those practices which lead to quality learning. Marton and Säljö (1984) suggest that students who conceive learning to be an increase in knowledge are unlikely to be those students who adopt a deep approach to learning. Clear links have been established between the conceptions of learning held by learners and the quality of learning outcomes (Biggs, 1993) and it has recently been suggested that conceptions of learning may be a more important influence on learning outcomes than approaches to learning since it is the learner's conception that influences the way they interpret the task and its demands and the way in which they go about that task (Trigwell & Prosser, 1996).

It has been shown that university lecturers hold qualitatively different conceptions of teaching and that these influence what and how teachers teach (Samuelowicz & Bain, 1992; Kember & Gow, 1994). Researchers have described conceptions of teaching in a number of ways (Martin & Balla, 1991; Dall Alba, 1990; Pratt, 1992; Samuelowicz & Bain, 1992; Kember & Gow, 1994). and these common conceptions have emerged:
- Teaching as presenting information;
- Teaching as transmitting information;
- Teaching as illustrating the application of theory to practice;
- Teaching as developing the capacity to be expert;
- Teaching as exploring ways of understanding from particular perspectives; and
- Teaching as bringing about conceptual change (Bruce & Gerber, 1994).

Kember and Gow identified two orientations to teaching: teaching as facilitating learning; and teaching as knowledge transmission. Recent studies have shown a relationship between conceptions of teaching and approaches to teaching, as well as conceptions of teaching and conceptions of learning (Trigwell & Prosser, 1996). Consequently these conceptions of teaching can play a major role in determining student learning outcomes.

It seems likely that the teaching context will play a role in the way in which teachers conceive of their role since conceptions of teaching include the what of teaching and the how of teaching. It has been shown that some teachers hold different conceptions of teaching depending on the level of students whom they are considering (Samuelowicz & Bain, 1992). In addition, it has been suggested that there are developmental aspects of both conceptions of teaching and learning. Hence, it seems likely that if one is conceiving of teaching in relation to teaching young children then the conceptions of teaching may be somewhat different to those described by university lecturers. Additionally for pre-service teachers who are in the process of
developing a set of beliefs about the phenomenon of teaching it is also likely that these conceptions will develop as they think more about what they believe is involved in teaching. Since these students are to become teachers the ways in which they conceive of teaching will play an important part in the way in which they approach the task of developing as a teacher and preparing themselves for the role of a teacher.

This Study
Data were collected from thirty first year Bachelor of Education (Primary). Students provided written responses to questions relating to their beliefs about what is meant by teaching and learning and reflective journal entries provided further evidence. A smaller group of students were interviewed about what they thought learning and teaching meant. Interview transcripts provided more elaborated data.

Studies of conceptions of learning examine the relation between subject and object aiming at describing and systematising experiences to produce categories of description of the qualitatively different ways aspects of teaching and learning are experienced (Van Rossum & Schenck, 1984). Data relating to conceptions of learning were analysed initially by following Pramling's recommendation that pre-existing categories (in this case those identified by Marton, Dall Alba & Beatty, 1993) were used to order the responses. Where responses did not fit existing categories new categories were developed by grouping expressions from transcripts on the basis of similarity, difference and complementarity.

Data relating to conceptions of teaching were analysed inductively to develop categories of description of teaching on the basis of similarities, differences and complementarities between statements. Following the principles of phenomenographic research the data set was considered as a whole.

Conceptions of Learning
At the beginning of the year students' conceptions of learning matched those described in the lower levels of the hierarchy of conceptions described by Marton et al. (1993).
Learning as increasing one's knowledge: Learning was seen as the acquisition of knowledge. The consumption metaphor identified by Marton et al. was less clearly apparent, students in this study frequently referred to exposure to ideas or knowledge.
Learning is adding to our knowledge
Obtaining knowledge
Gain more knowledge
We learn through exposure
Being exposed to situations, information and experiences
In common with the students interviewed by Marton et al., students made
no distinction between conceptions of learning, at this level explanations of learning were generally synonyms for learning.

Learning as memorising and reproducing. Learning was seen as remembering in order to reproduce information or behaviour is a similar way to that described by Marton et al.

We learn by practising what we have learned

Learning is to remember

Learn by practice, study and testing

Learning as applying/acquisition of facts which can be used when required. Students also described a conception of learning that saw learning as the application of knowledge to new or unusual situations.

Applying what you know to new information

Learning is taking in what happens around you so that information can be used at a later date.

Using new information

A new conception was identified: Learning as social and personal growth. In this conception learning has a strong personal and affective dimension but it is not as encompassing as Mart et al.'s sixth conception, learning as changing as person. There is a social dimension to this, as learning is seen to be about fitting in to society and about interacting effectively.

Learning means being able to express my views and opinions confidently and to fit into society.

To learn anything you need an open mind and willingness to learn.

Learning takes place when it is fun and interesting. The learner's imagination is captured and they are inspired. Improving oneself.

It's integrating knowledge into one's life for growth as an individual.

You never stop learning, it occurs no matter where you are or what you are doing. Having an open mind.

Experience is considered to play an important role in how learning occurs and learning is also seen to result from the mistakes made by the learner and from observing the mistakes of others.

We learn when we experience different situations

We learn through experience

Is experiential

Learning is life and all of its adventures.

Learning from mistakes.

You learn from others, from their mistakes.

We learn by trial and error.

Later in the semester students described a broader range of conceptions including more sophisticated views of what constituted learning.

There was no evidence of Marton et al.'s fourth conception of learning as understanding where learning is seen as the learner grasping or understanding an idea, meaning or developing a conception of something
was evident:

Learning as seeing things in a different way (Marton et al). The learner becomes capable of seeing things in a different way, and the process of change is emphasised. Using new information to add or change oneself, to broaden one’s view . . . gaining new ideas through experiencing elements of your environment which may change your point of view of that particular aspect of your environment which may in turn change your relationship with it.

It's thinking about new experiences so something changes, whether it be a point of view, or opinion or beliefs. View things (you already know) from different angles, then use it as a step to a broader view.

Students' views of learning also included the idea of a context for learning which required the removal of “comfort”, learning occurs when this is removed or the learner goes beyond (instigated by either the learner or another). You learn more effectively when you are pushed out of your comfort zone.

Learning takes place when you are forced to take risks, push yourself out of your comfort zone.

Learning is about risk taking.

Students again identified a personal, affective dimension to learning. This may be seen as similar to Marton et al’s changing as a person conception.

Having an open mind, it never stops happening. Learning is self discovery.

Learning is everyday growing.

Learning is personal.

Learning is a continual experience.

Learning is a life changing experience.

In summary, students' conceptions of learning became more sophisticated to include views of learning that extended beyond the formal educational context. While conceptions of learning were identified that matched those identified in previous studies unique aspects of conceptions of learning were also identified. These mainly related to the how dimension of learning. At the lower level conceptions of learning, the importance of the role of experience in learning, and attention to motivational aspects of learning were new features. At the higher levels of conceptions risk and the removal of comfort in the learning context were significant new features of how learning occurs.

Conceptions of Teaching

In summary seven conceptions of teaching were identified:

Teaching as transmission [of knowledge and skills],

Teaching as helping to understand [and use in a practical way],
Teaching as extending simple ideas, developing more complex ideas,
Teaching as guiding, opening the door to new ideas,
Teaching as empowering, facilitating learning,
Teaching as encouraging a new perspective: re-thinking, re-evaluating,
seeing things differently, and

Teaching as fostering personal development, growing as a person.

Initially teaching was seen as being related to bringing about a quantitative change in what learners knew. It was described as being about transmitting or imparting information and skills and the teacher is seen as centrally active in this process. Two conceptions of teaching were identified: Teaching as transmission [of knowledge and skills]; and Teaching as helping to understand [and use in a practical way].

Teaching as transmission [of knowledge and skills]
The focus of this conception is transmitting new information and skills to the learner. Teaching is seen as an act of transferring or sharing of the teacher's knowledge and skills.
It's about transferring knowledge to students in an easy and understandable way.
It's the passing on of knowledge.
Imparting knowledge.
One individual passes on information to another.
Sharing my knowledge so they may understand something.
The teacher is the one who provides the information in order for it to be picked up by learners.
It's a way of getting students to learn. To teach you must have subject knowledge.
Conveying knowledge guided by a syllabus.

Teaching as helping to understand [and use in a practical way]
The focus of this conception is on understanding (at a comprehension level) and of the utilitarian value of what is learned.
Develop understanding in your students.
To help someone understand the concept.
Helping students understand things
teaching is facilitating students' understanding
... in order that they may understand something.

There is an emphasis on the value of what is learned and on the practicality of what is learned as well as usefulness in real life.
There is focus on learning for future use.
Getting them to understand what is learned and to know why it is done in such a way so they can use it later.
To understand and use that information in a practical way.
Teaching students to take initiative and relate what they learn to real life
Teachers should teach things that are relevant for life.
Teaching is about educating people in life areas.

Later Conceptions of Teaching
In addition to the previously identified conceptions, other, more sophisticated conceptions emerged. Some of the more sophisticated views saw the learner playing a more active role in the teaching-learning process and there was a shift from a focus on transmission to the development of knowledge and concepts and then of changing concepts. In all of these conceptions the focus was on the what of teaching, there was little description of how teaching took place. The highest level conception had a holistic view of the role of teaching in the development of the individual.

Teaching as extending simple ideas, developing more complex ideas
Here teaching is thought of as allowing the development of the ideas or knowledge that were transmitted in the previous conception. Ideas are more sophisticated and there is reference to creating an environment that allows the learner to extend the original knowledge to create a more complex idea or set of ideas. Learning is seen as a process, of construction. The learner plays a more active role in this conception although the role of the learner in this is not specified.

Developing a learner's knowledge to a higher level
Allowing learners to develop and expand their understanding and cognitive qualities
It's letting the child build on their knowledge to come up something more elaborate or different.
Teaching is about getting children to increase knowledge in ways that extend simple thoughts to become more complex.

Teaching as guiding, opening the door to new ideas
This conception sees the teacher as a guide and the learner as active in the process. The teacher retains control of the process selecting where the learner should be directed, but providing opportunities for the development of independence. The act of teaching is seen as a creative process.
I think teaching means guiding others to a destination, it's showing the way not the answers.
Teaching is opening doors to new avenues of thought.
Providing guidance so the learner can use what they need in life.
The teacher is there to direct the learning of students not to be the one who feeds them information.
Teaching is creative, it's not indoctrination.
Teaching is about being original and finding ways of showing children the way to learn in a way that is meaningful to them.
Teaching is about inspiration.
Teaching as empowering, facilitating learning
This conception views teaching as a process whereby the learner is
given power over the process of learning. It includes teaching being
seen as the means of providing learners with the skills and knowledge
necessary to learn.

Teaching is guiding others to help them think for themselves and come
to their own conclusions about situations, experiences, ideas and so
on.

Teaching is giving children a sense of being in control of their
learning.

Teaching is enabling someone to learn about things they don't know.
Providing students with new information and experiences in order to
help them deal with later life.

Letting students take initiative, relate what they learn to real life
and develop the skills they need to learn.

Teaching is giving a positive outlook on learning to my students. To
seek out, explore and question.

This conception also includes a “professional” dimension of teaching.
It's about being a professional, being ethical.

Teaching is about providing learners with the necessary knowledge and
skills in a professional and responsible way.

Teaching as encouraging a new perspective: re-thinking, re-evaluating,
seeing things differently

The focus here is on changing ideas and providing the conditions under
which an individual can think originally and come to see different
perspectives.

Teaching is creative. It's about nurturing original thinking.
Getting people to learn from experiences and to get them to look at
things from all points of view, so their ideas change.
Teaching means using a knowledge base to nurture original thinking.
Providing the conditions for rethinking and reevaluating what you
believe.
Helping people see things in a different way, to take different points
of view and be more open minded.

Teaching as fostering personal development, growing as a person

This conception which was expressed by only two students views teaching
as a process which fostered the personal development of the individual.

It saw the teaching process as contributing to the “whole person”.
To become a thread in the fabric that creates, shapes, and clothes the
students. . . growing as a person. It's about helping to add to the
fabric of their individuality.

It's about making it possible for the individual to grow as a person.
Personal growth through life, so it includes equipping children with
social skills as well as knowledge.

Discussion

The results show that preservice primary teachers hold quite
distinctive conceptions of teaching. While there is some similarity
between the conceptions described by these students and those identified in studies of university teachers there are also significant differences. These differences may be attributable to a number of factors including the lack of teaching experience of the preservice teachers and the individual's beliefs about the nature of the learners whom they would be teaching and the teaching context.

In addition pre service teachers' conceptions developed over the course of the semester, becoming more sophisticated as they developed a vocabulary for talking about teaching, and became aware of what was involved in teaching, particularly what was valued in teaching. These students held views of teaching that focused on the individual learner and aspects of the “person” and there was a clear affective dimension to teaching. It is only possible to hypothesise about reasons for this conceptual change but it appears likely that this is more a function of conceptual development about teaching than a change per se.

Conclusion
The conceptions of learning and teaching held by these pre service teachers were different from those identified in previous studies. Conceptions of learning were broadly similar to those identified my Marton, Dall Alba and Beatty (1993) but students' conceptions emphasised the role of experience and risk taking in learning as well as taking a personal development perspective on school learning. Conceptions of teaching reflected some aspects previously identified but there was a less focus on syllabus and course content and more attention given to the individual person and the affective aspects of teaching. Both conceptions of learning and teaching became more sophisticated over the course of the semester perhaps as students developed a broader knowledge base about teaching and learning and developed a language for talking about them. In addition, the unit of study required students to reflect on their own learning experiences and beliefs, to share these with other students and to reflect on previous experiences of teaching and to critique teaching vignettes. These results suggest that there are developmental considerations in conceptions of teaching and learning and that it may be possible to influence the nature of conceptions held by pre-service teachers. The results also support the notion that the context of teaching and nature of the learner play important roles in the conceptions of teaching held by teachers.

REFERENCES

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