

6-1-2009

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Maria Northcote  
*University of Newcastle*

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### Recommended Citation

Northcote, M. (2009). Educational Beliefs of Higher Education Teachers and Students: Implications for Teacher Education. *Australian Journal of Teacher Education*, 34(3). <https://doi.org/10.14221/ajte.2009v34n3.3>

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## **Educational Beliefs of Higher Education Teachers and Students: Implications for Teacher Education**

Maria Northcote  
University of Newcastle

*Abstract: This paper begins by acknowledging the established and powerful link between educational beliefs and the teaching and learning practices of teachers and students. Based on this belief-practice connection, the paper documents the findings of a study that investigated the beliefs of a group of higher education teachers and students, most of whom were teaching and learning in a teacher education context. The paper concludes with a set of practical suggestions for university teachers and students involved in teacher education courses. The suggestions have been constructed by considering the messages from past literature and by drawing on the findings of the study reported in this paper. These recommended practical applications are expressed in terms of how they have been applied to a specific teacher education context.*

### **Introduction**

All teachers and students hold a range of beliefs – whether they are beliefs about religion, education, health, politics or a multitude of other topics. When combined, teachers' and students' beliefs about teaching and learning are often referred to as educational beliefs. Educational beliefs have been investigated for their application in practical teaching and learning situations. The articulation and application of these beliefs has been the focus of many educational research studies in past years, although many of these studies have investigated teachers' beliefs separately from students' beliefs. Nevertheless, the results of these studies have implications for teaching and learning practice. Studies of educational beliefs tend to be typified by discussions and debates about how teaching *and* learning practices are influenced by educational beliefs and, conversely, how these beliefs are influenced by practice. This belief -practice relationship is central to the study outlined in this paper.

### **The literature**

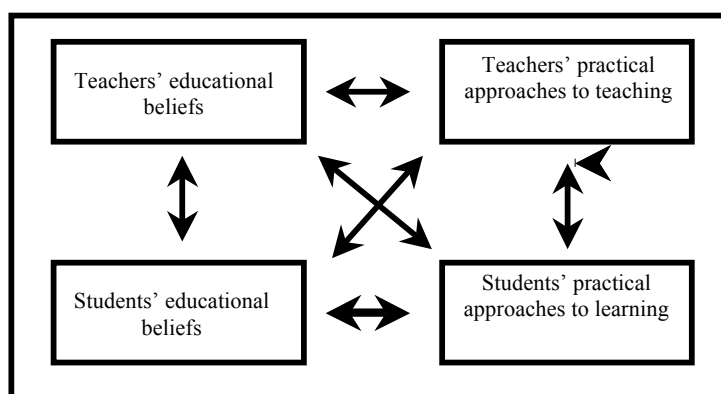
To inform the design and implementation of the study, a literature review was conducted which documented how research into the educational beliefs of teachers and students, especially in higher education contexts and teacher education courses, had been approached in the past. This literature review revealed two main messages: that there is extensive evidence of the strong link between educational beliefs and educational practice; and that more research is required into the intersection between teachers' and students' beliefs, and beliefs about teaching and learning.

The strength of the beliefs-practice relationship has been documented by a range of researchers (for example, Archer, 1999; Dart et al., 2000; Prosser & Trigwell, 1997) with some especially focusing on the context of teacher education (for example, Brownlee, 2003; Graber, 1996; Tatto, 1996). Findings from such studies have implications for course design processes, as well as teaching and learning practices. These studies suggest that:

1. in terms of course design, the beliefs-practice nexus should be addressed by placing practical skill development alongside activities which encourage students to regularly

- reflect on their educational beliefs (Cronin-Jones, 1991; Kember, Kwan, & Ledesma, 2001);
2. teachers' practical experiences can influence their beliefs in general ways (Greene & Zimmerman, 2000; McKenzie, 1996; Schuh, Walker, Kizzie, & Mohammed, 2001);
3. teachers' beliefs inform their use of specific instructional strategies that, in turn, impact on the quality of student learning (Biggs & Moore, 1993; Chapman, Ramondt, & Smiley, 2005; Chapple, 1999; Entwistle, McCune, & Hounsell, 2002);
4. teachers' practical approaches to teaching and their teaching intentions were directly influenced by their conceptions of teaching (Kember & Kwan, 2000; Norton, Richardson, Hartley, Newstead, & Mayes, 2005); and
5. students' educational beliefs impact on their own learning practices (Archer, Bourke, & Cantwell, 1996; Dart et al., 2000; Johnston, 2001; Kember & Wong, 2000; Taylor, 1996).

These findings indicate that teachers' and students' practical approaches to teaching and learning are linked to their educational beliefs, and vice versa. Such findings also signify the value of considering such relationships when designing courses. This complex network of teachers' and students' beliefs and practices is represented in Figure 1.



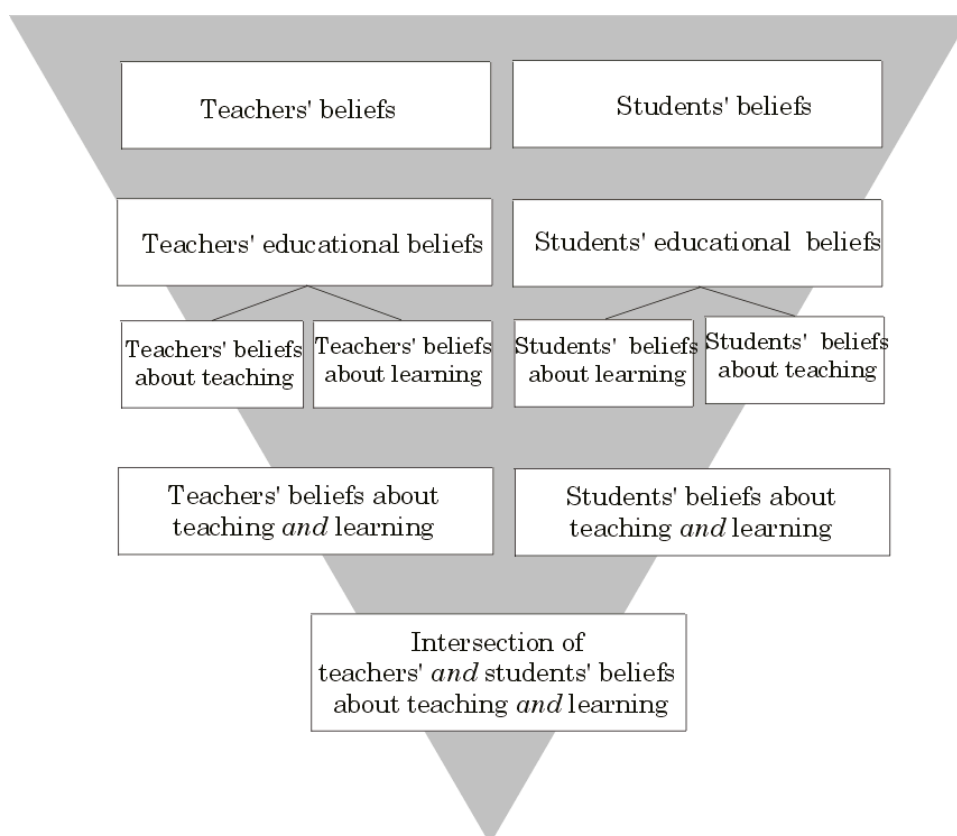
**Figure 1: Network of Teachers' and Students' Educational Beliefs and Practices**

Despite the strong link between practice and beliefs, based on overwhelming evidence from research studies which suggest that this link is vitally important in terms of the quality of teaching and learning, the relevance of educational theory and beliefs in teacher education courses has been scrutinised by the wider community (Ministerial Council on Education Employment Training and Youth Affairs, 2003; The Parliament of the Commonwealth of Australia, 2007). Also, the place of theory and educational beliefs is often questioned by those enrolled in such courses with cries such as "just tell us what to do".

In addition to highlighting the link between educational beliefs and practice, literature in this field indicated that the educational beliefs about teaching and learning held by higher education teachers and students have been examined in isolation from each other. The literature review found that many studies had already investigated teachers' beliefs (Driel, Bulte, & Verloop, 2007; Kember, 1997; Samuelowicz & Bain, 1992, 2001; 2002, to name a few) and students' beliefs (Calderhead, 1996; Chalmers & Fuller, 1999; Eklund-Myrskog, 1998; Schommer-Aikins, 2008, to name a few) but such investigations were usually conducted in isolation from each other.

Similarly, another set of studies were found that had investigated either beliefs about teaching and teachers (for example, Åkerlind, 2004; Berliner, 1989; Kember et al., 2001) or beliefs about learning and students (for example, Archer et al., 1996; Chapple, 1999; Dart et al., 2000; Forrester-Jones, 2003). However, very few studies (for example, Baker & Moroz, 1996; Tavares, Brzezinski, & Silva, 2000) had investigated the beliefs held by teachers *and* students in the same study. Moreover, even fewer studies (for example, Peterson, 1988) had investigated the beliefs of the two groups about teaching *and* learning. These gaps in the literature indicate that, to date, there

had been limited exploration of the intersection between teachers' and students' beliefs (see Figure. 2), especially in university and teacher education contexts.



**Figure 2. Scope, Nature and Organisation of Educational Belief Literature**

In recognition of this disparity in the literature, a more comprehensive approach to investigating teachers' and students' beliefs is required (Forrester-Jones, 2003; Witcher, Sewall, Arnold, & Travers, 2001). Consequently, the study reported in this paper, was designed purposely to investigate the teaching *and* learning beliefs held by a group of teachers *and* students who taught and learned together at a large Australian metropolitan university: "The teaching/learning partners in the classroom need to be more aware of each others' differing perspectives of the teaching/learning environment they experience" (Baker & Moroz, 1996, p. 9).

## The study

The participants in the study involved five university teachers and a group of students in each of their tutorial classes, almost 100 students in total. Three of the five classes involved in the study were enrolled in teacher education courses, one class in a computer science course and one class in a multimedia course. The student-participants in four of the classes (or tutorial groups) in the study were undergraduate students and one class was made up of postgraduate students. Because the participants were made up of both teachers and students, namely one teacher and a group of students from the same university tutorial group or class, each "set" of participants, were teaching and learning at the same time within the same context.

A selected sample of the participants were interviewed about their educational beliefs, all participants completed belief inventories to indicate their beliefs about teaching and learning, and some participants were requested to record their beliefs in a reflective journal across a semester period (see Table 1 for examples of questions used in interviews, the Educational Belief Inventory and the reflective journal). The method of using a reflective journal in the study was a limitation as use of the journal was inconsistent across the participants.

<b>Selection of Interview Questions</b>
What is your view of effective teaching and/or effective learning?
How would you describe the qualities of a good teacher or a good learner?
How do you believe students learn best?
What would be the three things you would expect from ideal learners? What do you expect from ideal teachers?
How do you believe learning takes place? What is learning?
What is happening during the process of teaching? What is happening during the process of learning?
What is the difference, in your mind, between teaching and learning?
<b>Selection of Educational Belief Inventory (EBI) Items.</b>
I believe teaching is concerned with supporting student learning.
I believe teaching is an activity aimed at changing students' understanding of the world.
I believe teaching is concerned with increasing students' understanding of a topic.
I believe that university teachers should act as resource persons by giving and sharing information.
I believe learning is about developing concepts.
I believe learning is about applying principles.
I believe learning is seeing something in a different way.
I believe when you learn something, this enables you to help others.
I believe that university students learn by participating.
<b>Selection of Reflective Journal Questions</b>
Tell me the three most important things you have learned this week.
Can you tell me how you came to learn these things?
How do you believe your lecturer or tutor helped you learn this week?
Please record any other comments you would like to make about your own beliefs, or your teacher's beliefs, about teaching and learning.

**Table 1: Examples of Interview Questions, EBI Items and Reflective Journal Questions**

The qualitative data in the study were systematically open coded in order to identify and construct the themes that represented the participants' belief comments, adopting a process similar to inductive analysis. The participants' belief comments were identified from interview, journal and questionnaire data as those statements that typically began with phrases such as "I believe ...". This process of open coding the participants' belief comments was chosen in order to establish the major themes present in their beliefs as well as to ascertain the patterns among their statements (Freebody, 2003) by establishing the frequency and the topics reflected in their beliefs. Strauss and Corbin's (1998) suggestions about open coding guided the process used to code the data gathered in this study.

This coded data then formed the basis of comparisons that were made between the teachers' and the students' beliefs using a Degree of Similarity Scale. The scale was devised specifically for this study and enabled degrees of belief similarity to be determined by comparing the amount and intensity of educational beliefs held by the students in the study with the amount and intensity of beliefs held by the teachers in the study. The Degree of Similarity Scale provided a systematic method for categorising teacher-student belief similarity as being at a maximum, high, medium, low or minimum level. See Table 2 for results of these analyses.

Once the qualitative data were analysed to identify the participants' educational beliefs and to ascertain belief similarity levels between teachers and students in the study, the quantitative data in the study were analysed in order to check and strengthen the findings from the qualitative data analyses. The quantitative data were analysed in two ways. Firstly, these data were analysed statistically in order to provide partial answers to the two research questions in the study. Secondly, to assist with triangulation, the quantitative data were further analysed by aligning the participants' questionnaire responses to the beliefs that were categorised within each of the themes, sub-themes and sub-theme categories.

In order to gain a fuller understanding of the participants' beliefs, the findings that were determined from analyses of the qualitative data were compared with the findings that were produced from analyses of the quantitative data. To reflect the interpretivistic nature of this study, this comparison process was governed primarily by the greater significance ascribed to the qualitative data and their subsequent analyses. The comparison of the two sets of data was driven by the nature of and the findings that emerged from the qualitative data and its analysis.

The results of the questionnaire analysis (based on the quantitative data) were compared with the results of the interview transcript analyses (based on the qualitative data). The findings from an analysis of the qualitative data and the quantitative data were compared in order to fully identify the participants' beliefs, and answer the first research question. The analysis of the qualitative data and the analysis of the quantitative data were then further compared to ascertain the level of similarity between the teachers' and the students' beliefs.

Once the qualitative and quantitative data gathered from the study were comprehensively analysed, the outcomes of these analyses were used to address the following research questions:

1. What are the educational beliefs of university teachers and university students?
2. How similar are the educational beliefs of university teachers and university students?

From these analyses, the beliefs of the teachers and students were identified and then compared in order to ascertain the degree of similarity between teachers' and students' beliefs, using a Degree of Similarity Scale devised particularly for this study. Similar patterns were identified across the beliefs expressed by the participants from each of the five classes which represented a range of academic domains. Although three of the five groups of teachers and learners were enrolled in teacher education courses, there were no notable differences in the quality, nature of diversity of their educational beliefs when compared to the students enrolled in the computer science or multimedia courses. For this reason, the findings of the study are presented without discriminating between the courses in which the teachers taught or in which the students were enrolled.

## Findings

The findings of the study can be considered in terms of the two specific research questions cited above, as well as in terms of the overall themes that emerged from the study that were related to teacher-student relations and general course design issues. Findings from the research questions are presented first in this paper.

The first research question was considered in terms of identifying the participants' specific educational beliefs. A clear thematic structure emerged from the data analysis process which indicated four major themes:

1. Beliefs about teachers and learners
2. Beliefs about the processes of teaching and learning
3. Beliefs about the content taught and learnt
4. Beliefs about the purposes of teaching and learning

Although each of these themes contained sub-themes and other sub-theme categories, the four major themes emerged from *both* the teachers' beliefs and the students' beliefs about teaching and learning. From this thematic structure, the actual beliefs expressed by the participants in the study were typified by the:

- *range of belief comments*: the participants' comments were wide-ranging and were not bounded by traditional or typical educational issues;
- *parallel nature of belief comments about teaching and learning*: participants' comments about teaching were similar in nature to their beliefs about learning;

- *links between the belief comments across the four themes*: many belief comments required multiple coding as they were relevant to more than one theme;
- *hierarchical and non-hierarchical nature of the belief comments*: participants' comments indicated that their beliefs were not always hierarchical in nature or complexity;
- *proportion of the belief comments across the four themes*: most of the participants comments were related to the processes of teaching and learning, or teachers and learners, with fewer comments being focused on content or the purpose of teaching and learning; and
- *high levels of similarity between teachers' and students' beliefs*: in all themes, the teachers' beliefs were very similar to the beliefs expressed by the students in the study.

Once the participants' beliefs were identified, the teachers' educational beliefs about teaching and learning were compared with the students' educational beliefs. Outcomes of this analysis answered the second major research question, how similar are the educational beliefs of university teachers and university students? In terms of comparing the teachers' educational beliefs with the students' educational beliefs, the varied methods of data analysis indicated one very consistent finding: no matter how they were compared, the educational beliefs of the teachers and the students in this study were overwhelmingly similar. In particular, their beliefs about students and learning were even more similar than their beliefs about teachers and teaching. When the beliefs held by all of the participants in all of the classes across all of the four major themes about topics incorporating teachers, teaching, students and learning were compared, there was a "high" degree of similarity between the teachers' and the students' beliefs overall (see Table 2).

Theme	Beliefs about ...	Degree of Similarity	Beliefs about ...	Degree of Similarity
Theme 1	Teachers	Medium	Students	High
Theme 2	Process of Teaching	Medium	Process of Learning	High
Theme 3	Content Taught	High	Content Learnt	Medium
Theme 4	Purpose of Teaching	Medium	Purpose of Learning	High
Themes 1-4	Teachers and teaching	Medium	Students and learning	High

**Table 2: Similarity between Teachers' and Students' Beliefs about Teachers/Teaching and Students/Learning**

The findings which emerged from the analysis of both the qualitative and quantitative data gathered during the study had implications for the design of higher education courses, particularly teacher education courses. As the data from the interviews, questionnaires and journals were analysed, some strong patterns emerged regarding the nature, structure and quality of the participants' educational beliefs. The following patterns were the most evident across the teachers' and students' beliefs across all forms of data analysis. They are offered here in this paper as design issues to be considered for both teachers and students enrolled or teaching in teacher education courses.

**Metaphorical language.** Both teachers and students used a variety of metaphors to express their educational beliefs. For example, some participants viewed learning as a journey or as a process of getting through a fog. Others saw teaching as a process of being a search engine, filtering out the irrelevant aspects of knowledge for students. One participant described an "emotional shutdown" when her sense of self worth was at risk in the learning process. The use of metaphorical language was especially evident when the participants expressed beliefs that included emotionally related issues such as their frustrations with learning or their feelings about their teachers or themselves.

**Simple and complex beliefs held simultaneously.** Although much of the belief literature tends to categorise teachers' or students' beliefs in hierarchies of complexity, many of the participants held simplistic and complex beliefs about the same issue simultaneously. For example,

some participants viewed the learning process as both complex and simple. Others believed teaching to be difficult and easy.

**Opposing beliefs held.** In many cases, the participants held opposing, competing or conflicting educational beliefs about the same issue at the same time. For example, some participants believed that the learning process enable students to increase their level of independence but also believed that teachers should guide students at every step of the way during their learning.

**Links with epistemological beliefs.** The participants' educational beliefs had strong overtones of epistemological issues. In fact, it was very difficult to separate their educational beliefs about teaching and learning from their beliefs about knowledge. For example, the participants' beliefs about the changing or unchanging nature of knowledge were reflected in their view of how knowledge was presented in both teaching and learning processes.

**Replication of the conceptual structures of teaching and learning.** As the data analysis process progressed, the similarity between the structures of the participants' beliefs about teaching compared to the structure of their beliefs about learning was marked. This became an ongoing theme that consistently emerged at all levels of data analysis.

**Emphasis on social and emotional aspects of educational beliefs.** The qualitative data gathered throughout the study especially demonstrated that participants held many and varied beliefs about the social and emotional aspects of teaching and learning in higher education contexts. In fact, when asked about their strongest belief about teaching or learning, many of the participants expressed their beliefs in relation to how learning or teaching was influenced by students' and teachers' emotions and social interactions.

**Similarity of teachers' and students' beliefs.** Overwhelmingly, no matter how or how often the data were interrogated, the findings were consistent: the teachers' educational beliefs were very similar to the students' educational beliefs. Their beliefs about the processes of teaching and learning were the most similar of all of the educational beliefs expressed by the participants throughout the study. Both groups of participants held more idealistic beliefs about teaching and teachers whereas their beliefs about learning and students were more tempered with greater realism.

**Teachers' and students' beliefs just as complex as each other.** As well as being very similar to each other's beliefs, the teachers' and students' educational beliefs were just as complex as each other. There was no great discrepancy between the level of complexity between the two groups' beliefs.

Therefore, in terms of the design of teacher education courses at university, these findings have implications on how such courses are structured and implemented, especially in terms of teaching and learning practices.

### **Implications for practice: Application to a teacher education course**

So, what does this mean for the design of teacher education courses in higher education contexts? The findings of this study produced a number of implications for those involved in teaching, studying or designing higher education courses. Since the majority of the participants in the study were from teacher education courses, these implications are presented here as applications for how the study's findings were applied to a specific four-year teacher education course with approximately 800 enrolled students; the Bachelor of Education (Kindergarten through to Year 7) at a Western Australian metropolitan University. The implications for practice, produced from the study outlined in this paper, have been grouped under seven different categories and incorporate general suggestions as well as practical applications.



### **1. Revisit the role of emotions, affective and social issues**

The beliefs expressed by the participants in this study about teachers, students and the learning context were strongly focused on affective and social issues. These foci suggest that the participants believed that students' emotional well being is a central issue in teaching and learning at university. Furthermore, such beliefs may indicate that university teachers and students perceive affective and social dimensions of teaching and learning to be just as significant (and sometimes more so) than cognitive and intellectual dimensions of teaching and learning.

This finding was applied within a teacher education course by addressing the students' affective and social needs, as well as their academic requirements in course material, course processes and evaluation techniques. Where necessary, lecturers referred students to counsellors to assist them with non-academic challenges that impacted on their academic progress.

### **2. Make the beliefs-practice link transparent**

Since this study showed that some university students' educational beliefs are just as diverse and complex as their teachers' educational beliefs, university teachers may find that teacher-student relationships improve when practices which encourage each group to make their educational beliefs transparent are implemented. Such results indicate that university teachers should not assume that their students hold naïve or less sophisticated educational or epistemological beliefs than their own. Practices, such as ongoing reflection, which allow for the recognition of both teachers' and students' educational and epistemological beliefs within the same context, may reveal and emphasise the similarities, rather than the differences, between the two groups' beliefs. The use of metaphors and the encouragement of metaphorical language to express educational belief statements within reflection activities may provide suitable vehicles to reveal teachers' and students' beliefs in these contexts.

This finding from the study was applied within a teacher education course by integrating questions about educational beliefs in tutorials and lectures, metaphors were used to discuss complex ideas about learning and teaching, and teachers' beliefs were frequently shared and compared in varied formal teaching situations and during informal conversations with both students and colleagues.

### **3. Teacher-student relationships and teaching-learning link**

Since the participants' beliefs about teachers and students, and teaching and learning, proved to be so similar in nature and structure, the processes as they are enacted in higher education contexts may also become less distinct from one another. Blurring the boundaries between teachers and students, and teaching and learning, may support such results. Since many of the beliefs expressed by the teachers and the students in the study were student-centred (even their beliefs about teachers and teaching), teaching methods at university may become more focused on student learning than the more traditionally content focused processes. Furthermore, students enrolled in university courses may take on roles, such as peer tutoring or guest lecturing, which allow them to be more involved in activities which have traditionally been associated with the teacher's domain. The modern view of a teacher as an ongoing learner would also complement this perspective of reducing the traditional separation of teachers' and students' roles, and teaching and learning processes.

When applied to a practical context, this research finding was implemented by grouping together instructional course readings and resources that focused on teaching *and* learning issues. Links between teaching and learning, students and teachers, became the focus of tutorial discussions, reflection and analysis activities. Teachers in the course frequently presented themselves as learners and provided regular opportunities for students to act in teaching roles.

#### **4. Belief idealism and teacher-student expectations**

Because the study found that both university teachers and students hold quite idealistic beliefs about teachers and teaching, compared to their more pragmatic, realistic beliefs about students and learning, educators and students alike may benefit by considering ways in which the unevenly high expectations about university teachers can be balanced with more realistic expectations. This finding also indicates that teachers should understand that students may in fact have more idealistic beliefs about learning than may be obvious in their learning and study practices. Likewise, students should also keep in mind that teachers may hold more idealistic beliefs about teaching than are evident in their teaching practices. Processes which encourage each group to communicate their expectations to each other may encourage both teachers and students to be less absolutist in their judgements about the level of idealism they expect of their teachers. Such considerations may reduce teacher-student conflict based on educational belief mismatches.

When applied to a specific teacher education context, this finding encouraged open discussion between students and teachers about each other's beliefs. A further research study was initiated in which students' and teachers' perceptions of assessment in the course are being investigated. The study has provided a common ground for both teachers and students to discuss complex or problematic issues in the course in a more democratic manner. Findings from this ongoing study have resulted in a more realistic consideration of teachers' and students' roles within the course, especially regarding assessment issues.

#### **5. Assessment design**

The teachers' and students' beliefs expressed by the participants in this study that were directly related to assessment issues were typically quite similar. So, despite being perceived as an area that is typified by differences in opinion between teachers and students, discussion of assessment issues (including the purpose of assessment, especially in terms of knowledge construction) may alleviate some of the areas of contention that are often associated with setting, completing and marking assignments and examinations in university courses.

When applied to a teacher education course context, this finding was employed by including a purpose statement in conjunction with all assessment tasks. Furthermore, the specifications of assessment tasks that students typically find more difficult to complete than others were provided to students in associated with learning support tools and services. Also, as mentioned above, a study about teachers' and students' assessment beliefs in the course is underway.

#### **6. Epistemological issues**

Throughout all examples of teacher-student belief similarity analyses, the beliefs that were associated directly or indirectly with beliefs about the nature of knowledge or content consistently revealed high degrees of teacher-student belief similarity. These degrees of similarity were especially high when associated with beliefs about complex epistemological issues indicating that teachers and students sometimes hold similarly complex beliefs. Such a finding may suggest that discussions about the complex nature of knowledge associated with particular academic disciplines may be worthwhile to incorporate into university courses of study, even in the early years of undergraduate study, in order to enhance the quality of learning.

This finding enabled the teachers in a teacher education course to introduce discussions about the meaning of knowledge, and how this impacts on teaching and learning practices, even in first and second years of the course. Both teachers and students in the course were involved in these discussions. The term "epistemology" was used regularly throughout the course.

## 7. Reconsider previous assumptions

Conclusions from this study challenge some of our perceptions about the cognitive nature of teaching and learning, they question the impact of academic context on teachers' and students' beliefs and they challenge understandings about the hierarchical nature of educational beliefs. Instead of providing irrefutable explanations about how the results of this study may cause us to doubt some earlier assumptions about learning and teaching theory, this paper puts forward a set of questions to consider when designing higher education courses about education in general and teacher education:

- Does context matter as much as previously thought when studying educational beliefs? Is the teacher's context or the student's context a primary influence in the development of their educational beliefs?
- Are beliefs about teaching and learning as hierarchical as previously believed? Does it matter if teachers and students simultaneously hold opposing beliefs or beliefs with different levels of intensity and complexity about the same issue?
- Are teachers' beliefs necessarily more complex or sophisticated than their students? Is it possible for students' educational and epistemological beliefs to be more complex than their university teachers? If so, how can these differing levels of educational beliefs co-exist in the same teaching and learning situation?
- What is the impact on student learning if teachers' and students' beliefs are markedly opposing? Is it possible still to have high quality learning outcomes if levels of teacher-student belief similarity are low? How can we incorporate components of our courses that allow for these varying levels of teacher-student belief similarity?
- What allowances do we provide for our students to engage in processes of unfinished conceptual change and to deal with, what Perkins (1999; 2006) refers to as, "troublesome knowledge"? Do we make provision in our courses for students who are in the process of forming new beliefs, revising old beliefs and possibly consolidating existing and developing belief systems?

## Conclusion

The combined work of educational researchers has revealed a concern with how students' and teachers' educational beliefs influence their learning and teaching practices. In the case of teacher education, the link is most evident in teachers' teaching practices (such as teaching strategies, preparation methods, course design considerations, face-to-face interactions and assessment techniques) and students' learning practices (such as study strategies, motivational issues, assignment completion, research techniques and contributions to learning activities).

The findings that emerged from this study were considered in light of previous studies in the area and current recommendations from contemporary researchers. All in all, it appears that more research is still required into the area that represents the overlap between teachers' *and* students' educational beliefs about both teaching *and* learning. Despite the need for more investigation in this area, the research to date, in conjunction with the study outlined in this paper, suggests that, as teacher educators and as pre-service teachers, we should be aware of our own educational beliefs and make them transparent to ourselves and to others. Furthermore, we should encourage our colleagues and our students to explore and articulate their own educational beliefs and use them to explain, justify, question and inform future educational practice. Such practices may contribute to the ongoing, global goal to improve the quality of teaching and learning in conjunction with the experiences of what it is to be a teacher and a learner, or, hopefully, both. Examples of how the findings of this study were applied to a particular education teacher course in a higher education context were also included in this paper.

With this important belief-practice link established, the study of educational beliefs and theories in conjunction *with*, not separate *from*, practical elements in our courses is vital to the quality of the students graduating from them. Such belief-related course components serve to explain past and current practice in terms of evidence-based reasoning, enabling our graduates not just to explain and justify past and current educational practices, but also to inform their future practice in ongoing and sustainable ways. By doing so, the study of practice-related beliefs in teacher education courses will ensure that our graduates are not just practitioners but reflective and informed professionals who are able to question and change practice for the better. As Kurt Lewin is often quoted as saying: "There is nothing as practical as a good theory".

The study reported in this paper has presented evidence to enable the identification and comparison of the educational beliefs held by a selection of university teachers and students. In conclusion, this synergistic relationship between the beliefs of teachers and the beliefs of students may be more significant, and may have more impact on the quality of university education, than the beliefs held by only one of these groups; that is, the combined educational beliefs of both groups may represent more than the sum of their parts:

*Well, if you have a teacher who cares about what they're teaching and cares about actually imparting the knowledge to a student (they're not here because they're being paid, they're here to actually impart the knowledge) and a student who wants to get the knowledge, then, obviously if those two come together, it's the best possible scenario. If you had a teacher that really didn't care and a student that really didn't care, you wouldn't get very far.*

(Kent, Student)

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