IMPACT OF TEACHERS' KNOWLEDGE AND BELIEFS ON CLASSROOM PRACTICES

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Abstract: Teaching is a highly complex activity. We can recognize good teaching when we see one; yet, it is very difficult to describe what constitutes good teaching. This is so because teachers often have to apply knowledge from multiple domains of teacher knowledge or teacher cognition. Among these domains are knowledge of pedagogy (general as well as personal), knowledge of learners and learning, subject matter knowledge, knowledge of context (general as well as specific) and pedagogical content knowledge (PCK). Furthermore, knowledge is intricately linked to a teacher's beliefs. This paper describes the various domains of teacher knowledge and beliefs and how these impact classroom practices, based on in-depth interviews with four student teachers who had just completed a term of teaching practicum in schools.

Domains of Teacher Knowledge

Traditionally, teacher education emphasized teacher knowledge of subject matter (Shulman, 1986). In the last few decades, teacher education researchers have focussed on the effectiveness of general pedagogical methods such as teachers' use of questions, the design of assignments and curricula and the assessment of student performance independent of subject matter (Ball & McDiarmid, 1990). Now, scholars recognize that both the subject matter knowledge and pedagogical knowledge are crucial to good teaching and student understanding (Mason, 1999; Niess & Scholz, 1999; Reynolds, 1992; Tobin & Garnett, 1988). In fact, Shulman (1986, 1987) has suggested that pedagogical content knowledge (PCK) forms a unique and distinct knowledge domain of teacher cognition. PCK concerns the manner in which teachers relate their subject matter knowledge (what they know about what they teach) to their pedagogical knowledge (what they know about teaching) and how subject matter knowledge is part of the process of pedagogical reasoning. Shulman (1986) defined PCK to include "*the most useful forms of representation of those ideas, the most powerful analogies, illustrations, examples, explanations, and demonstrations – in a word, the ways of representing and formulating the subject that make it comprehensible to others…. [It] also includes an understanding of what makes the learning of specific concepts easy or difficult: the conceptions and preconceptions that students of different ages and background bring with them to the learning (p. 9).*"

Teaching is a complex and personal phenomenon. A teacher's practice is not just an expression of his or her own professional knowledge that is informed by one's professional background, experience and perceptions but it is also one that is shaped by personal attitudes, beliefs, and goals. While knowledge maybe the most influential conception driving classroom practice (Meyer, Tabachnick, Hewson, Lemberger & Park, 1999), personal views of the knowledge are central to these conceptions

(Hewson, Tabachnick, Zeichner, & Lemberger, 1999b). For example, Morine-Dershimer and Kent (1999) emphasizes the importance of the interplay between personal pedagogical knowledge which is gained from personal beliefs and personal practical experience and general pedagogical knowledge which is derived from the research literature.

For this discussion, I have identified the following knowledge components from several models (Carlsen, 1999, Magnusson, Krajcik, & Borko, 1999 & Morine-Dershimer & Kent, 1999):

1. Pedagogical Knowledge (General and Personal)
2. Personal Beliefs and Practical Experience
3. Knowledge of Learners and Learning
4. Subject Matter Knowledge
5. Contextual Knowledge (General and Specific)
6. Pedagogical Content Knowledge
7. Knowledge of General Educational Goals, Purposes and Values

Research Design

Teacher education research has a long history spanning some four decades. During the 1960s and 1970s, the literature was generally quantitative in nature involving large numbers of teachers. In the 1980s, various kinds of qualitative studies emerged involving much smaller sample sizes. By the 1990s, several researchers had reviewed the body of literature to identify common themes and draw inferences for teacher professional development (Borko, 1989, Grossman, 1990, Kagan, 1992, Sprinthall, Reiman, & Sprinthall, 1996). Interestingly, Kagan (1992) noted that the only two developmental models based on empirical research about teachers are Fuller's (1969) and Berliner's (1988) models. Fuller's model (1969) focussed specifically on teachers' concerns. Berliner (1988) used the schema theory and comparative studies of cognitions underlying novice and expert teaching performances to infer a five-stage model of teacher development.

The objective of this research is to explore how teacher knowledge and beliefs impact classroom practices. The scope of this paper is confined to eleven student teachers from the one year Post-Graduate Diploma-in-Education (PGDE) Programme at the National Institute of Education, Nanyang Technological University. I had observed and supervised these teachers during their teaching practicum which lasted a term of ten weeks. The research paradigm adopted is the qualitative stance with an emergent research design (Maykut & Morehouse, 1994). In-depth interviews (Lincoln & Guba, 1985) averaging one and a half hours allowed for prolonged engagement with four out of these eleven interviewees. The interviews were conducted in two stages: pre- and post practicum periods. The semi-structured interviews were conducted with an interview guide. All interviews were audio-taped and later completely transcribed. The draft transcripts were then given to the interviewees so that where ambiguities arose, the meaning that the interviewee was trying to convey could be clarified. In this way, provisions were made for the trustworthiness of the research data. When analyzing the interview data, the grounded theory research approach (Strauss & Corbin, 1990) was used to identify, describe, and interpret distinctly different challenges faced by these student teachers.

Data Analysis & Findings

In analyzing the data, three challenges confronting the student teachers surfaced. Firstly, their limited knowledge of the vast domain of teacher knowledge presented many problems for their classroom teaching practices. Secondly, the demands of the harsh realities in schools, coupled with their perceptions of a shortage of time, did little to aid their knowledge development. In fact, in some instances, they faced a dilemma in deciding between what they believe they would want to do and what the school expects them to do. Thirdly, the teachers found the entire practicum a very meaningful experience because it allowed them time for reflection about their practice.

It is well documented in the research literature (Kagan, 1992, van Driel, de Vos, & Verloop, 1998) that student teachers have limited teacher knowledge. For example, with weak general pedagogical knowledge, they tend to teach from textbooks, rely more on teacher-talk, not use wait-time when questioning, not be able to use probing questions, and not be able to employ appropriate pedagogical strategies to meet the mixed abilities of a heterogeneous class. The following are some illustrative quotes of these problems:

> *"A lot of teacher-talk..." when asked why Teacher finds his own lesson boring. (T4, 31 March 2000)*

> *"Wait time, this is a negative point for me." (T1, 8 May 2000)*

> *"Sometimes I try to wait and then the student keep standing there, refusing to talk at all." (T4, 8 May 2000) Teacher does not know how to probe for further response.*

> *"For my class of students with mixed abilities, sometimes when they are given seat work, the smarter students are able to complete the work faster...and when I am teaching the slower students, coaching them, then it is very difficult to turn and focus on the faster ones. That is the problem I face." (T3, 8 May 2000)*

Teachers are also aware that they have very little pedagogical content knowledge and are therefore searching for more and better representations.

> *"For me...I don't tell them in-depth. I know that I cannot explain certain things. I don't know what is the explanation behind certain things. So I just tell them that it is going to be like this. That's it. I don't really go in-depth." (T1, 8 May 2000)*

> *"About the cyclic part, I think some of the students were not able to fully understand what 'cyclic' means. Maybe there are better ways to teach them what it means by 'cyclic'." (T3, 29 March 2000)*

> *"Sometimes they don't understand what I am saying and actually I have difficulty trying to explain it in another way. For Math problems, if this is the way of solving the problem, I can only think of that way to explain it." (T3, 8 May 2000)*

"I really can't think of any other ways (or strategies)." (T2, 28 March 2000)

The second challenge facing the teachers was the perennial complaint of the shortage of time. One teacher felt it so strongly that he complained about it seven times intermittently throughout the interview. He was open to trying other new and innovative strategies "if only time permits" (T4, 31 March 2000). Another teacher gave her class a quiz because she thought it was interesting for them but it "took up so much time" (T2, 8 May 2000) that she never give quizzes anymore after that. They also found a class of forty students to large for them to manage. "The smaller the (class) size, the better you can monitor the students' work" (T3, 8 May 2000). More importantly, one of them actually found the external school demands contradicting her teaching philosophy and beliefs:

> *"I did this activity where the students are supposed to fill in a refugee form. We spoke about refugee crisis around the world like in Kosovo. They are to pretend that they are refugees, to write a form to UN requesting for political asylum. They are supposed to state the reasons why they are being chased out of their home country and what they think they can contribute to the new country. I thought that would help them to empathize and to be able to look at the themes behind the poem. Well, the school administration didn't like it. I was told that this was too frivolous. I was told that I ought to be teaching them how to answer exam questions instead. I thought, OK, fine, they might have a point there because that was about 3 weeks away from the exams. But the point was that it was an unseen poem and they wouldn't actually be tested on that poem for the exams. In the scheme of work, it did say that the theme was empathy and to help them to empathize with the whole refugee situation. So I thought it satisfied the demand of the scheme of work but obviously, they were not supposed to..." (T2, 8 May 2000)*

For another teacher, his belief that, as a teacher, he must be more knowledgeable than his students actually made him set more difficult tests for them when he found that they were scoring well "for the purpose of seeing who is the smartest one. And I want to prove to myself that they are not so smart after all" (T3, 8 May 2000). For professional growth to occur, prior beliefs are important. These beliefs need to be identified, modified and reconstructed (Kagan, 1992). In fact, "whether a novice is able to accomplish this also appears to depends on the novice's biography – particularly on whether he or she has reached a point in life where dysfunctional beliefs can be acknowledged and altered" (Kagan, 1992, p. 142). However, cognitive dissonance may be necessary for pre-service teachers to confront their own beliefs and acknowledge that they need adjustment.

A teacher's passion for the subject also has great impact on the teaching of that subject. When asked how her love for Literature influenced her teaching of it, she felt that it gave her "much more confidence…I can get the students involved in a discussion. I don't think I can do that if I don't like the subject" (T2, 8 May 2000).

Thirdly, although the practicum lasted only ten weeks, the teachers found the experience meaningful as it had provided them the opportunities for reflection. Undoubtedly, reflection is crucial to the developmental process (Rust, 1999). They

recognized reflection as a key element in helping them to develop their knowledge. One of them concluded that his experience was "…pretty enlightening. I get to learn about wait-time and a few strategies that I could implement…I think it is good because it makes me reflect on what I did well and what I did not so well" (T1, 27 March 2000).

Conclusion

The findings of this study underscore the important role played by knowledge and beliefs of teachers on their classroom practices. Reflection is key to understanding these intertwining relationships. While the findings may not be entirely new, they posed new challenges for future research. How do teachers develop their teaching knowledge? Are there distinct stages of development? Can teachers simultaneously develop these various knowledge domains? Teaching is intriguing because it is like "a peculiar form of self expression in which the artist, the subject, and the medium are one" (Kagan, 1992, p.164). It is complex, yet we know what good teaching is when we see one.

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