

An Examination of Various Determinants of Teachers' Belief in Teaching and Learning

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Abstract: Teacher's belief, was once an under-represented, under-estimated topic in China, that was less familiar to teachers, and has little professional guidance. With the implementation of interest-oriented education and the emphasis on teachers' beliefs, more and more teachers have begun to pay more attention to classroom interaction, the practical use of knowledge, and the cultivation of students' interests.

Keywords: Teachers' Belief; Teaching knowledge

In the literature review section, I will first define the meaning of beliefs, and then further focus on teachers' beliefs on teaching and learning and the relationship between beliefs and practice.

- What is a teacher's belief about teaching, learning, and the nature of the subject with the aim of providing interest-oriented education?
- What is the consistency between the teachers' beliefs and their practice?

1.1 Defining Beliefs

As teachers' beliefs have become a more and more important topic in the field of education literature over the past two decades (Bryan, 2003), it is of great importance to first define the term belief in a clear and understandable way. Pajares (1992) regarded the complex problem of defining beliefs as "at best a game of player's choice" (p.309). He stated that it is possible to find different names for teachers' beliefs in educational literature.

Bryan noted in his research that, educators used many ways to find out teachers' beliefs. The most common ways are Espoused Beliefs, Inferred Beliefs from Teachers' Actions, and Salient Themes in Science Education Research on Teacher Beliefs. He defined Espoused beliefs as "self-reported claims about the way things are or should be". (Bryan, 2003) As espoused beliefs may not always be consistent with teachers' practice, researchers also will examine teachers' beliefs from their classroom practices.

In a study of teachers' beliefs, James Calderhead (1996) classified teachers' beliefs into five categories: Beliefs about learners and learning, Beliefs about Teaching, Beliefs about subject, Beliefs about learning to teach, and Beliefs about self and the teaching role.

According to Scott (2015), the four core features of beliefs can be summarized as:

- Belief is used to describe the psychological structure of an individual.
- People's beliefs appear in groups, and they may conflict with each other.
- Belief is considered to be relatively stable.
- Belief affects the way teachers participate in practice.

Teachers' beliefs and teachers' knowledge are often talked about together and are sometimes mixed up. According to Green (1971), although there are many similarities between beliefs and knowledge, the differences between the two of them "seem to lie in the truth condition" (p.69). Pajares (1992) concluded the difference between beliefs and knowledge as "Belief is based on evaluation and judgment while knowledge is based on objective fact" (p.313). In order to distinguish teachers' beliefs from teachers' knowledge, Nespor (1987) concluded four differences based on the work of Abelson(1979):

- Beliefs often assert the existence or non-existence of entities.
- Belief also often contains the view of an ideal or alternative state that is opposite to reality and provides a way of combining

goals and paths.

- Beliefs are closely related to emotional components.
- Belief can be distinguished from knowledge by plot structure.

In a more recent study of Lynn A. Bryan (2003), he made several basic assumptions about the features of beliefs:

-Beliefs cannot be completely separate from one another, but are constructed as an “internal structure”. These systems are psychologically organized, but not necessarily logically organized.

-Beliefs have different levels of importance to individuals. Prioritize them according to their relationship to other beliefs or other cognitive and emotional structures.

-Beliefs have different levels of centrality beliefs are more core, or more important than others. The conclusion is that the more core a belief is, the more resistant it is to change.

-When a belief changes, the central position of the belief will have an impact on the whole belief system.

-Belief is far more influential than knowledge in identifying how individuals organize tasks and problems and is a stronger predictor of behavior.

1.2 Teachers' Beliefs on Teaching and Learning

1.2.1 Teachers' Beliefs about Teaching

Teachers' beliefs about teaching vary from each other. Some teachers regard teaching as guiding students to learn, while others think teaching is the transmission of knowledge (Calderhead, 1996). Calderhead also noted that some teachers see the purpose of teaching in a more academic way, and some may focus on the social interaction students develop in the classroom community. In his study with Russell in 1988, student teachers found that initially, they thought of teaching as telling and learning as remembering. It would be difficult for them to adopt the beliefs on teaching and learning that students have their own way of thinking. (Stoddart,1992)

1.2.2 Teachers' Beliefs about Learning to Teach

Student teachers are found to have beliefs about their teacher training process and career development. Experienced teachers often regard teaching as largely related to teachers' own learning experience, personality, and observation from other teachers. (Caldehead,1988). During classroom-based experiences, student teachers are found to value the importance of learning from experience (Book et al., 1983). However, Bullough found that some teachers thought their way of teaching was largely related to their personality and their relationships with others (Bullough et al.,1991).

1.2.3 Teachers' Beliefs about learning

James Calderhead (1996) pointed out that teachers' beliefs about learning are likely to have an influence on their approach to teaching tasks and their interactions with students. He also noted that different beliefs of teachers about learning would lead to “different types of classroom activity and support different patterns of classroom interaction.” Studies have shown that features like children's effort in the study (Peterson & Barger, 1984), children's personalities (Rohrkemper & Brophy, 1983), and children's attractiveness (Ritts, Patterson, & Tubbs, 1992) would influence teacher's teaching behavior towards the learners (Levine & Wang, 1983).

1.3 Relationship Between Beliefs and Practice

Although Teachers' Beliefs have been highly valued, it remains a question whether their beliefs about teaching and learning are consistent with their classroom practice. Rokeach (1968) noted that espoused beliefs may or may not be consistent with the person's real beliefs. He thought that beliefs “must be inferred as best one can, with whatever psychological devices available, from all the things the believer says or does”(p.2). Many studies also showed that teachers were observed to behave differently during the classroom practices observation and their espoused beliefs (eg., Galton, Simon, & Croll,1980). On the other hand, there is also evidence that many teachers have beliefs on teaching and learning consistent with their classroom practices and work performance. (Cornett et al.,1990: Wilson & Wineburg,1991).

In order to better examine the real beliefs of teachers, many researchers would infer their beliefs from classroom observation (Bryan, 2003). According to Bryan, methods of examining teachers' beliefs from actions include “prolonged field observations documented in field notes, observational protocols, and videotaping.” Digital editing tools like Video Analysis Tool (Bryan and Recesso,2006) and iMovie (Randy Yerrick, 2005) have both been used to record courses and help teachers reflect and refine their teaching and practices.

1.4 Changing beliefs

Haney (1996) believed that the basic feature of teachers' beliefs is that ‘beliefs are stable and highly resistant to change’. Studies have shown that f teachers' beliefs and practices cannot always be improved or changed during professional development sessions

(Bryan, 2003). Bryan also noted that mentoring and coaching relationships did a better job of revising and refining teachers' beliefs and practices.

According to Bryan, there are research shows that the beliefs of future science teachers are shaped by the way they were taught as students, also as "an observer of the profession and a participant in educational courses, as well as limited experience as a science teaching professional." The implicit and explicit information they received during their learning experiences gradually became their beliefs about teaching and learning, beliefs about the subject, and beliefs about learning to teach in the future (Eick and Reed 2002). Before their training to become a teacher, many future science teachers often do not come into contact with more modern educational theories, which advocate that learning is generative and corrective in nature. There are also conflicting results about the impact of the teachers' former learning experiences on teachers' thinking and learning to teach (Bryan, 2003).

According to the study by John Lemberger et al.(1999) about three future middle school teachers' beliefs and practices recorded during their teacher training program, the future teachers began their training with positivist beliefs about their subject and changing beliefs about teaching and learning. However, as they finished their training program, their beliefs about teaching and learning became more student-oriented. The researchers pointed out that teachers finished the program with conflicting minds about "positivist beliefs about knowledge and changing beliefs about teaching versus conceptual change teaching."

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