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## Personal Epistemologies and the Learning Paradox in Teacher Education: A Neglected Dilemma

Elana Joram

*University of Northern Iowa*

Carmen Montecinos

*Pontificia Universidad Católica de Valparaíso*

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## **Chapter 19**

# **PERSONAL EPISTEMOLOGIES AND THE LEARNING PARADOX IN TEACHER EDUCATION: A NEGLECTED DILEMMA**

***Elana Joram<sup>1</sup> and Carmen Montecinos<sup>2</sup>***

<sup>1</sup> University of Northern Iowa, USA

<sup>2</sup> Pontificia Universidad Católica de Valparaíso, Chile and  
Center for Advanced Research in Education

## **ABSTRACT**

In this chapter, we discuss the role that personal epistemologies play in teacher education, particularly with respect to the potential problems and roadblocks they may present. We suggest that epistemological beliefs govern the kind of knowledge that preservice teachers consider to be legitimate and worthwhile learning in their programs, regulate the ways in which they make choices among competing knowledge claims and justify their own choices. A body of research has examined epistemic cognition as a dimension of the cognitive growth that occurs during the college years (e.g., Baxter-Magolda, 2002; King & Kitchener, 2002; Perry, 1970), and recently, the role of personal epistemologies of preservice teachers, teachers, and teacher education professors in teacher education has been investigated (Schraw, Bendixen, & Dunckle, 2002; Joram, 2007; Shepard, 2000). However, relatively less work has been devoted to developing ways to modify preservice teachers' personal epistemologies. Notwithstanding the few studies that have been conducted in this area, we argue that teacher educators need to design learning activities that may help change epistemic orientations that have potentially negative consequences for teacher education. We suggest that examining literature on the learning paradox, with particular attention to the role of metaphor in learning, offers inroads to accomplishing these goals. Drawing on this theoretical background, we identify four approaches teacher educators can take to teach more effectively by taking their students' personal epistemologies into account.

## INTRODUCTION

Personal epistemologies have been defined as “conceptions of what counts as legitimate knowledge and how you know what you claim to know” (Schon, 1995, p. 27). In this commentary, we argue that preservice teachers’ personal epistemologies play a much greater role in determining the effectiveness of teacher education courses and programs than many teacher educators currently recognize (Joram & Gabriele, 1998; Joram, 2007). For example, teacher educators often try to persuade students of one point of view or another by referring to the results of educational or psychological research as supporting evidence. Joram (2007), however, found that many preservice teachers hold strongly to the belief that “each child is different”; this, in turn, leads to the idea that the results of a given study cannot be applied to the preservice teachers’ potential classroom because their students might be different from those who participated in the original study. Thus, the preservice teachers in this study voiced the reservation that although the research findings are valid for the context in which they were collected, they cannot be applied wholly or in part beyond that original context; in other words, they cannot be generalized. Although, no doubt, there is some validity to the idea that one cannot simply transport an educational intervention to a different context from the one in which it was originally developed and expect the same results (see Olson, 2004), rejection of all educational research findings, as many preservice teachers did in Joram’s (2007) study, is a gross oversimplification of the idea that educators must be sensitive to context and unique configurations of classrooms. Holding this kind of idiosyncratic view of professional knowledge may also undermine the value of external assessments and criticism, as it assumes that only the individual classroom teacher can know what is best for his or her students.

An examination of current textbooks used in teacher education courses (e.g., Ormrod, 2007; Woolfolk, 2006) shows that the language and forms of evidence used (e.g. “research has found that...”) may reflect the epistemologies of teacher educators more so than those of preservice teachers. In light of the findings by Joram (2007), we can surmise that this may cause preservice teachers to find little meaning in content that is packaged in a way that is inconsistent with their epistemological beliefs, albeit consistent with those of their professors. There are two complementary solutions to the problem that we have elsewhere labeled as “clashing epistemologies” (Joram, 2007). One is for teacher educators to include in their courses, strategies designed to change preservice teachers’ beliefs; the second is for teacher educators to take into account their students’ personal epistemologies, and modify their courses accordingly. In this commentary, we discuss both approaches, drawing on theoretical work on the *learning paradox*.

## PERSONAL EPISTEMOLOGIES AND THE LEARNING PARADOX

When considering the role of personal epistemologies in teacher education, we can pose the question entailed in the age old problem of Plato’s Meno or the “learning paradox” – that is, how is it possible for a learner to construct new knowledge that may be more complex and sophisticated out of existing prior knowledge that is less complex and not as sophisticated (Bereiter, 1985; Prawat, 1999)? We suggest that when considered in the domain of

epistemological beliefs, the learning paradox becomes particularly troublesome. When teacher education is the context, the challenges are daunting indeed.

First, we have the problem of preservice teachers' beliefs about the nature of knowledge, often revealed by material images in their discourse and writing: knowledge is often spoken of as being like a material thing that is to be "absorbed" or "soaked up." (Lonka, Joram & Bryson, 1996). In the case of learning, a materialistic conceptualization hearkens back to medieval views of the mind, in which memory is thought of as a container (Lonka, et al., 1996). Eysenck (1984) refers to this as a "spatial metaphor," where the mind is likened to a storehouse with memories and ideas housed within this space.

A view that seems naturally aligned with the spatial metaphor of the mind is that "teaching is easy" because it is considered to involve simply transmitting knowledge from the teacher to student through telling. We also see the essence of this metaphor threading through conceptions of assessment: according to this belief system, assessment is thought to merely consist of checking that knowledge has been properly appropriated (Shepard, 2000). Beliefs such as these may lie just under the surface of the often sophisticated constructivist jargon that our prospective teachers learn to use in their programs: we have often seen intrusions of a more static and materialistic personal epistemology in their language, written work, and lesson plans.

One particularly intractable characteristic of preservice teachers' personal epistemologies is the aura of confidence that surrounds them – the dispositional aspect of the epistemological package. According to this affective penumbra, teaching is considered to be easy, it can be done by anyone, and teacher education professors do not necessarily know any more than the preservice teachers themselves. This disposition is grounded in the more than 12 years of an "apprenticeship of observation", as a student observing and judging the actions of their teachers (Lortie, 1975). As Lortie argued, this apprenticeship makes prospective teachers less aware of the limitations of their knowledge and the biases embedded in looking at a classroom from the student's point of view.

Similarly, Renninger (1996) notes: "One of the interesting (and at times inconvenient) aspects of teaching about learning and instruction is that everybody knows something about each" (Renninger, 1996, p. 64). This prior knowledge, and concomitant confidence in the knowledge, may lead to resistance when teacher educators attempt to effect a shift in preservice teachers' beliefs about knowledge, learning, and teaching, often resulting in a negative impact on the teacher educator's own sense of efficacy (Bird, Anderson, Sullivan & Swidler, 1993). Another common scenario is for preservice teachers to demonstrate their knowledge of a different view in their teacher education program but then fall back on their prior beliefs once out of this context (Wideen, Mayer-Smith, & Moon, 1998). We suggest that part of this problem can be attributed to the "learning paradox in teacher education": teacher educators would like to jettison preservice teachers to a new and more sophisticated view of knowledge but the preservice teachers must rely on their own beliefs about the nature of knowledge to get there. How do we, as teacher educators, help "bootstrap" the development of this set of beliefs and find a solution to the learning paradox in teacher education?

## PERSONAL EPISTEMOLOGIES, THE LEARNING PARADOX AND METAPHORS

Prawat (1999) discusses four general approaches to dealing with the learning paradox in any domain: deduction, induction, language and discourse, and abduction. We suggest that currently, deduction is often the method of choice in teacher education: moving from the general to the particular. As reflected in educational psychology textbooks (e.g., Ormrod, 2007; Woolfolk, 2006), general principals are frequently presented with corresponding applications.

Prawat (1999) makes a strong case for the use of an abductive approach in coping with the learning paradox, with its roots in the philosophy of Pierce and Dewey. Abduction, according to Prawat, entails “reasoning from the known (rule) to the new or unknown (case) by way of metaphoric leap or projection” (p. 62). Although in abduction, the initial form of ideas is imagistic, eventually, the learner moves to a phase of testing these early images by seeing how well they relate to other similar ideas. Drawing on Dewey, Prawat argues that this phase is socially mediated, in that it is through social interactions that the learner discovers how the idea fits into a larger scheme.

Metaphors are central to abduction: it is the way that “primitive” understanding can be drawn into language (Gibbs, 1994). Gibbs notes that a central function of metaphors is to communicate ideas that would otherwise be difficult to express literally. He gives the example of the metaphor of ingesting a nutrient, a concrete experience that then serves as a metaphor for love – for example, love is something that we may be *starved* for. Thus, we can surmise that metaphors may provide both a glimpse of the inner epistemological landscape of our preservice teachers, as well as a vehicle for transporting them beyond their current beliefs. It is this latter potential that offers a key to resolving the learning paradox. Metaphors provide a private and parallel world to language and logic – a world in which insights and fundamental restructuring of ideas can occur, to be later worked out in a logical system of language, rules, and justification.

In dealing with the learning paradox, Prawat (1999) discusses Dewey’s notion that big ideas are thought to develop a life of their own, to have the capability to “move of their own accord” and to “bring other facts into line” (p. 70). Thus, the idea is that a learner can develop more complex ideas from simpler ones because the ideas themselves provide the impetus for evolution into more sophisticated forms. The danger here, as we have noted above through our discussion of the belief that “each child is different,” is that a central core idea can “run amok”—in other words, when ideas can “move of their own accord,” we have no guarantee where they may move to. We suggest, therefore, that teacher educators pay close attention to their role in guiding and facilitating the way in which central ideas evolve and are related to other ideas.

## **TAKING PERSONAL EPISTEMOLOGIES INTO ACCOUNT IN TEACHER EDUCATION**

Based on the theoretical background described above, there are number of ways that preservice teachers' personal epistemologies can be taken into account in teacher education, with the goal of making teacher education programs more effective. The first approach is to use metaphors for teaching and learning. This is not a new idea, and having students examine their own metaphors for learning and teaching, and reflecting on their development has been attempted by numerous teacher educators (Bannink & van Dam, 2007; Saban, Kocberker, & Saban, 2007; Shaw & Mahlios, 2008). For example, Renninger (1996) developed an exercise in which students, early on in an educational psychology course, decide whether they think the metaphor of snorkeling or carpentry most aptly describes learning. The teacher candidates discuss the metaphors in groups and draw a representation of their own model of learning which they return to and modify, if they wish, at the end of the course. This is one example of how preservice teachers' beliefs about learning can be brought into their own awareness and discussed in a teacher education course.

Using metaphors in teacher education programs appears to be successful when the goal is to reveal preservice teachers' beliefs about learning and instruction; however, it has met with limited success when the goal is to effect changes in these beliefs. For example, Leavy, McSorley and Bote (2007) found that even after a year-long examination of personal metaphors, 42% of preservice teachers held onto a behaviorist metaphor, down only slightly from 49% at the beginning of the course.

Alternatively, Prawat (1999) suggests that an abductive approach in the classroom might entail tracing the history of metaphors in a discipline, and how they developed and were refined. Applying this to teacher education, we suggest that teacher educators, together with their preservice teachers, examine the history of metaphors for learning and teaching. Metaphors for learning can readily be found throughout the writings of well-known educational and psychological theorists, for example, John Locke thought of the human mind as a "blank slate," lacking any innate traits (Pinker, 2002), Friedrich Froebel regarded the child as "a tender flower," school as a garden, and teachers as gardeners (Moore, 2002), and the French philosopher Guyau, considered teachers to be hypnotists (Vygotsky, 1997). We note here that the key is to get preservice teachers to apprehend why one metaphor gave way to another because this may give preservice teachers an appreciation for their limitations. A teacher educator will likely feel more comfortable undertaking a critical historical analysis of metaphors for learning and teaching in concert with his or her students than of preservice teachers' own metaphors – because the latter could be perceived as a personal attack.

A second way that personal epistemologies can be taken into account is for teacher educators to develop a model of how their students think, and to run everything through this model much as a teacher of, for example, a first grade class would. This might mean that instead of simply stating "research has found..." and having the expectation that this will have some currency with preservice teachers, the teacher educator must constantly look for effective ways to present "embodied theory" to preservice teachers. This is the Holy Grail for teacher educators: ways that through case studies, video cases, etc., the critical content of their courses can be made meaningful to preservice teachers through instantiation in compelling contexts

Talking through the anticipated lens of the preservice teachers also means that teacher educators must be wary of ideas and concepts that may be presented in a well-meaning fashion, but have the potential for misinterpretation in the service of preservice teachers' beliefs. When theory is being assimilated into the epistemological framework of preservice teachers, the ideas may take on dimensions that were not intended in the original theory, such as the idea that research results can never be applied to a classroom other than the one in which they were originally collected. For example, the notion of "multiple intelligences," now a staple in educational psychology textbooks and many teachers' editions of textbooks, may feed into preservice teachers' belief that "each child is different." Another example is preservice teachers interpreting multicultural education as an approach to address individual differences among students, as opposed to cultural differences among the ethnic groups in a classroom (Montecinos & Ríos, 1999). We acknowledge that individual differences are important to consider, however, cultural differences also play a significant role in K-12 students' opportunities to fully participate in the classroom. Nevertheless, preservice teachers' individualistic views are so pervasive that we often find they deny the possibility of generalizing across classes as well as recognizing cultural, rather than just individual, differences within the classroom. Understanding such interpretive frameworks through which preservice teachers make sense of information discussed in class can assist teacher educators in developing activities that anticipate ways in which ideas may be altered to be consistent with the epistemological beliefs.

A third approach we have used in our learning courses is to ask preservice teachers to conduct an action research project in response to the question "What can I do to become a better learner?" Students are asked to identify a specific learning situation (e.g., a particular class they are taking or learning strategy they use), keep a journal to collect quantitative and qualitative data to describe the situation they want to change, and make use of learning theories covered in class to analyze and interpret data and reflect on the process. Through feedback offered on their journal entries, we raise probing questions about the epistemological beliefs that underpin the problem chosen, the way it is framed, the data they choose to collect, and how data are collected and used. For example, after taking a self-administered questionnaire on learning strategies, a student wrote in her journal that her worst scores were in the areas of analysis, learning to learn, and developing her own ideas about material. She added, "*maybe that is why all my studying hasn't paid off*". In response to this comment, we asked: "*If you compare what you do when analyzing a text versus analyzing the ideas suggested in the questionnaire, in what ways are these two similar and/or different? Why do you think lacking in these aspects may be affecting your grades?*" In addition, in class sessions we use the Critical Friend Protocol<sup>1</sup> to facilitate peer dialogue and learning as preservice teachers work out the various tasks involved in their action research assignment.

Finally, drawing on the *teaching for conceptual change* approach (National Research Council, 2005), teacher educators can try to help prospective teachers understand discrepant events that cannot be accounted for by their current beliefs, particularly, when they are applied to themselves as learners. For example, when they present teaching as telling, we can ask them to think about their own experiences, identifying those in which they learn best as

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<sup>1</sup> The *Critical Friends* protocol for collegial dialogue was developed by the Coalition of Essential Schools at Brown University. [http://www.alliance.brown.edu/pubs/changing\\_systems/teach\\_to\\_student/Friends\\_Protocol.pdf](http://www.alliance.brown.edu/pubs/changing_systems/teach_to_student/Friends_Protocol.pdf) (retrieved February 12, 2009).

well as those that have been less productive. Through an analysis of their own experiences they can identify the contradictions that inhere in their own belief system. Alternatively, they can be asked to recall a particularly successful, meaningful learning event and then have them explain it through their current belief system, identifying its limits and possibilities.

## CONCLUSION

In this commentary, we have argued that personal epistemologies are the gatekeepers for effective preservice teacher education. Static models of learning, which harken back to medieval models that view the mind as a repository for knowledge, may be maintained by preservice teachers even while they speak the jargon of current constructivist educational models. Drawing on the work of Prawat, Dewey, and Pierce, we have discussed ways in which preservice teachers' conceptions of learning and teaching may be effectively dealt with, with specific attention to the privileged role played by metaphor in this process.

Currently, other than instructors' manuals for textbooks, there are few resources for teacher educators that include effective classroom activities to challenge preservice teachers' epistemological beliefs. One way to promote the development and use of effective exercises would be to have more teacher educators post on-line classroom activities, which they have developed and used successfully, so they can be shared, similar to what we find in K-12 teaching (e.g., the National Council of Teachers of Mathematics' *Illuminations* website). A second way would be to have major organizations, such as the American Educational Research Association, publish collections of effective activities that are submitted by teacher educators, comparable to the *Activities Handbook for the Teaching of Psychology* (American Psychological Association, 1999). Whatever approaches and resources used, we suggest that epistemic cognition should become part of the explicit curriculum in our teacher education courses. Without such explicit attention, we argue that preservice teachers' personal epistemologies, and unrecognized differences between these epistemologies and those of teacher educators, will continue to form an invisible and insurmountable barrier to effective teacher education.

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