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Personal epistemology, and its Effects on Teaching and Learning

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Marwan Alwreaikat
School of Arts, Department of Psychology, University of Jordan
*Corresponding author: Alwreaikat M.

Abstract Beliefs that a learner has about concepts to do with learning have crucial implications for the effectiveness of their learning. The two concepts I will focus on are intelligence and knowledge, and my concern will be with adult learners.In regard to knowledge, a pertinent term is personal epistemology – the beliefs one has about what knowledge is, how it is acquired, and how we know what we know.Beliefs are hugely influenced by one's life experiences and interpretations of experience and by the wider social/cultural/political climate. This would suggest that beliefs are susceptible to change and development. So a further aspect of personal epistemology is the factors that bring about such changes.Changes in the wider culture can transform attitudes to knowledge. For example, in recent times the ability to learn has come to be more valued than attaining a specific body of knowledge.
Keywords: Beliefs, Learning, Personal epistemology

Introduction

While one important line of research on personal epistemology has continued Perry's (1970) effort to identify developmental stages in students' epistemological thinking (e.g., Baxter Magolda, 1992; King & Kitchener, 1994), mostly through the use of interviewing methodology, Schommer (1990) initiated a line of research that departed from the developmental approach and focused more on how students' epistemological beliefs are related to their academic cognition and performance.

According to Schommer (1990), personal epistemology may be described as a system of more or less independent beliefs, conceptualized as beliefs about the simplicity, certainty, and source of knowledge, as well as beliefs about the control and speed of knowledge acquisition. While the three first dimensions fall under the more generally accepted definition of personal epistemology as beliefs about the nature of knowledge (simplicity, certainty) and knowing (source) (Hofer & Pintrich, 1997; Pintrich, 2002; Rozendaal, de Brabander, & Minnaert, 2001), the two last dimensions in Schommer's (1990) conceptualization have been more controversial. Both these dimensions may be derived from Dweck's (1999; Dweck, Chiu, & Hong, 1995; Dweck & Leggett, 1988) research on students' implicit theories of intelligence. In that research, some students have been found to favor an incremental theory and conceive of intelligence as a malleable, increasable, and controllable quality, while other students seem to construct an entity theory and believe that intelligence is a fixed and uncontrollable trait. In addition, students who believe that intelligence is fixed and uncontrollable seem more likely to believe that learning occurs quickly or not at all, in accordance with their intellectual gift. Even though some researchers (e.g., Hofer & Pintrich, 1997; Rozendaal et al., 2001) have wanted to define personal epistemology in its purest

form, thus limiting it to beliefs about the nature of knowledge and knowing, Schommer-Aikins (2002a, 2002b) has argued that beliefs related to implicit theories of intelligence (control, speed) should not be conceptualized separate from beliefs about knowledge and knowing. In her view, the two kinds of beliefs are probably intimately tied to each other, and both have been found to be related to several important aspects of learning (Schommer-Aikins, 2002a, 2002b). It seems to be a clear need, however, to examine the relationship between Schommer's dimensions of epistemological beliefs and implicit theories of intelligence more directly. In this study, we therefore related measures of different epistemological beliefs to measures of implicit theories of intelligence.

To examine her proposed system of epistemological beliefs, Schommer (1990) developed a 63-item questionnaire, with two or more subsets of items written to assess each of the five proposed dimensions. Factor analyses reported by Schommer and associates (e.g., Schommer, 1990; Schommer, Crouse, & Rhodes, 1992) have consistently yielded four factors, which, stated from a naïve perspective, are: Simple Knowledge (ranging from the belief that knowledge is best characterized as isolated bits and pieces to the belief that knowledge is best characterized as highly interrelated concepts), Certain Knowledge (ranging from the belief that knowledge is absolute and unchanging to the belief that knowledge is tentative and evolving), Fixed Ability (ranging from the belief that ability to learn is given at birth to the view that ability to learn can be increased), and Quick Learning (ranging from the belief that learning takes place quickly or not at all to the belief that learning is gradual). Thus, only the hypothesized dimension "source of knowledge", which Schommer (1990) suggested would range from the belief that knowledge is handed down by authority to the belief that knowledge is derived from reason, has not emerged as a factor from these analyses.

Schommer's (1990; Schommer et al., 1992) factor-analytic research may be called into question because she has used the 12 subsets of the 63 items as variables rather than the individual items, with this departure from common factor-analytic methodology potentially impacting the observed factor solutions (Hall, Snell, & Foust, 1999). When Qian and Alverman (1995) conducted an item-based factor analysis of the Schommer Epistemological Questionnaire (SEQ) after eliminating those items related to the hypothesized dimension concerning source of knowledge, which had not emerged as a factor in prior research, the following three factors were found: Simple–Certain Knowledge, Fixed Ability, and Quick Learning. In this first attempt to factor analyze the items of the SEQ, the hypothesized dimensions of simplicity and certainty of knowledge thus merged to one factor. Later, Hofer (2000) reported that an item-based factor analysis of the 32 SEQ-items that fell on Qian and Alverman's (1995) three factors yielded a four-factor solution where no single factor replicated those factors reported by Schommer (1990; Schommer et al., 1992) using subscales as variables.

When Schraw, Bendixen, and Dunkle (2002) tried to individually factor all 63 items of the SEQ, they identified only two factors (Certain Knowledge and Fixed Ability) corresponding to factors reported by Schommer, while three additional factors (Incremental Learning, Certain Knowledge 2, and Integrative Thinking) differed from her results. Thus, when items are entered into factor analysis without a priori groupings, the SEQ may result in another dimensionality of personal epistemology than that reported by Schommer (1990; Schommer et al., 1992).

In their landmark review of personal epistemology research, Hofer and Pintrich (1997) noted the paucity of cross-cultural studies of epistemological beliefs, stating that "existing frameworks based on U.S. student samples are undoubtedly shaped by underlying cultural beliefs" (p. 130).

Literature review

the researchers of the current study argue that it may not be a matter of mere progression through the educational ladder, but also a matter of the quality of learning/ teaching environments within which this progression takes place. This argument is supported by Wardlow and Scott (2000) who state that sophistication of the students' belief system is dependent upon the availability of suitable teaching/learning environments that inculcate in students the spirit of risk-taking and initiative-pursuing. Such environments have not yet been maturely established in the Saudi EFL context. The instructional practices prevailing therein, as Al-Hajailan (2003) indicates, are still dominated by the behaviorist practices of language teaching represented by the audio-lingual method that depicts teachers as experts and models that should be copied if one wants to be a good language learner. Students are situated in a receptive mode, failing to engage with the material or each other. Although constructivist methodologies and communicative language teaching are increasingly being highlighted in teacher education and inservice training programs, actual teaching practices are still tailored to audio-lingual methodologies focusing on rote learning and convergence. In such a context, it is natural for a student who has been instructed to imitate teachers' examples and memorize textbook content to believe that linguistic knowledge has to be provided and modeled by teachers as omniscient figures. The language input that is valued is that presented in EFL textbooks and not that constructed by the students through reasoning and logic.

The concept of knowledge construction is fundamental to any debate about the relationship between student-teachers' knowledge base and effective classroom practice (Alexander, 2004). Paradoxically, subject knowledge as a central pillar in the Primary ITT curriculum is currently under threat among teacher-education providers largely because of political rather than educational imperatives (Brehony, 2005; Menter, 2006). Yet, as Poulson (2001:52) crucially reminds us, "there is still much to learn about the knowledge which successful teachers do possess (and) about the relationship

between knowledge, values and practice".

Becoming an effective teacher demands a deeper understanding of the intellectual processes involved in knowledge construction and its translation into effective pedagogic practice. What Shulman (1987) describes as pedagogic content knowledge may be vital to such practice, but its bedrock has to be students' security in their own epistemological beliefs and understanding. Further, enhancing students' own metacognition within a disciplinary field increases the degree to which they are able to transpose their own beliefs and approaches to learning into new settings (Hobson, 2003).

The imperatives of giving students a firm epistemological grounding holds implications for the kinds of teaching to which they are exposed across a teacher-education programme – the kind that enables students eventually to take some control over the learning process, develop a sense of metacognitive awareness and to challenge received wisdom about the objectives of teaching (Campbell, 2004; Edwards, 2002). To that extent Whitty (2000) also draws our attention to the linkage between teachers having expert knowledge and values and being able to make their own independent judgements in relation to effective professional practice. But knowledge as understanding, at least in the humanities as well as in teaching, is not a demonstrable, steady state (Haggis, 2003); it is an awareness of conflicting perspectives, building claims out of uncertainty, and the questioning of fundamental values and assumptions.

Edwards (2002) deals in a similar currency in describing the goals of teacher education by drawing attention to the synergies between epistemological development and professional values. Teacher-learners, he argues, who think, question and act as academic craftsmen in their disciplinary fields are more likely to take greater pedagogic risks and interventions in the classroom. This view is echoed in more recent work which sees professional expertise being grounded in persistent and iterative engagement in constructing and reconstructing knowledge claims (Kelly, 2006).

In all of this there is a reminder of Entwistle's (2000) earlier research. Training programmes, he argued, can positively influence evolving teaching conceptions in several important respects. His research has indicated that, as a first principle, the impetus for changing limited conceptions and approaches to learning, and then to teaching, is promoted by a reconsideration of the nature of knowledge within a discipline. Secondly, he makes the vital point that confidence in disciplinary thinking not only enables teachers to acquire a sharper focus on their own learning development but potentially to equip teachers to capitalise on 'chance' events in the classroom which are unplanned and yet so often provide the springboards for significant learning. But, what counts in this transformative stage, are observed and explicit models of disciplinary thinking and practice.

Pedagogic Considerations

Learners' growth in epistemological understanding – their evolving views of

the nature and conceptions of knowledge and its construction – defines deeper approaches to learning (Moon, 2005). Knowledge as understanding is also embedded in the processes of critical thinking that involve working with complex ideas and uncertainties, and making judgements lodged in the use of evidence and framed by specific contexts. Graff (2002:27) uses the language of critical thinking 'habits' which are of a kind that do not come readily to many students but are indispensable to intending teachers.

"Habits of thinking that are so familiar to academics that we hardly recognize them often seem counter-intuitive [to students. These habits include the search for hidden meanings in texts and experience generally, the inclination to be contentious and to foment controversy, the tendency to make seemingly obvious assumptions explicit and the general obsession with searching for problems where often there do not seem to be any. The most productive way for teachers to help students cope with these unfamiliar academic habits is to identify these habits in class, inviting students to discuss them and even air their doubts about them".

Expressed in these terms, promoting critical thinking entails a range of pedagogic practice that is conducive to a nurturing learning environment – challenging learners beyond their 'comfort zone'; deliberately exposing learners to and interactions with differing and competing perspectives on a problem; promoting collaborative inquiry set within a classroom atmosphere that embraces risk-taking in the exploration of ideas and argument.

These features are consistently represented in current research literature. Further, they are also descriptive of the 'scaffold' teacher-educators need to provide in order to help students develop sophisticated beliefs about 'knowing' (Brownlee et al, 2001). But, as Brownlee (p.262) further reminds us, 'although most teacher-educators would recognise the importance of helping students to develop sophisticated beliefs about knowing, often teacher education programmes do not provide the scaffolding to facilitate this development'.

'Scaffolding learning', however, is an overworked and elastic term. Primarily, it involves the provision of meaningful contexts in which knowledge construction takes place, that is the interplay between conceptual constructs, evidence and application within a disciplinary setting (Goulding et al, 2002). Macleod and Golby (2003) use the descriptor of 'situated practice' but they too are essentially concerned with learning that is built on contexts in which real, legitimate inquiry is conducted. 'Scaffolding', as a pedagogic tool conducive to critical thinking, necessarily incorporates learning tasks but not of a kind that invite the rehearsal of rules and routines, typically within a linear sequence, but instead configure the search for meaning through activities that admit uncertainty and competing knowledge claims.

Conclusion

Students need to prepare for rapidly changing environments where highly

specific knowledge may become obsolete. Clearly, the goals of education include the transfer of general academic ability to new topics or problems (Barnett & Ceci, 2002). Employers, educators and policy makers want schools to develop generalized abilities that will serve evolving adult pursuits. Critical thinking, if it can be taught and if it is indeed a generalized ability, may be one way to prepare students for uncertain and evolving domains. This study examines the effect of sophomore accounting materials designed to prompt the thinking abilities schools and society seek.

Mandsley and Strivens (2000) assert that knowledge and thinking are intertwined in a complementary way. In order to think about a concept, the student must first understand it. These authors would likely predict that deeper content knowledge found in the prior study (Springer & Borthick, 2003) is a natural by-product of thinking critically about the subject matter. Guest (2000) also cites this dual benefit asserting that "knowledge telling" in traditional classes does not measure up to defending one's ideas in a critical thinking class. Celuch and Slama (1999) suggest that changing the unwritten class goal from "what do you need to know" to thinking about evidence and reasons forces students to learn the content more deeply and engage actively with the material.

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