

Epistemological Beliefs and Teaching-Learning Perceptions of Student Teachers: A Literature Review

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This article reviews theoretical and empirical research on epistemological beliefs (EBs) and teaching-learning conceptions (TLCs), with a particular focus on their implications for teacher education in Myanmar. Epistemological beliefs—assumptions about the nature of knowledge and processes of knowing—have been shown to influence how teachers interpret information and evaluate claims (Hofer & Pintrich, 1997). Teaching-learning conceptions, which encompass beliefs about the purposes of education and the roles of teachers and students, directly shape instructional practices (Chan & Elliott, 2004). Research consistently demonstrates that sophisticated epistemological beliefs correspond with constructivist teaching-learning conceptions, while naïve beliefs reinforce transmissive orientations (Brownlee et al., 2001). In Myanmar, where teacher-centred practices have long dominated (Soe et al., 2017), recent reforms promote student-centred pedagogy and 21st-century competencies (Pyae Kyaw, 2022; Pyae Kyaw & Kimmel, 2023). By situating Myanmar within broader debates, this review underscores the importance of culturally grounded perspectives in the study of teacher beliefs. It concludes with implications for teacher education and policy, and identifies directions for future research, including longitudinal designs, interdisciplinary approaches, and the integration of digital technologies.

Keywords: epistemological beliefs, teaching-learning conceptions, student teachers, literature review

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Introduction

The quality of education is closely linked to how teachers and students conceptualise knowledge, teaching, and learning. Epistemological beliefs (EBs)—assumptions about the nature of knowledge and processes of knowing—provide the philosophical foundation for how educators make sense of information, evaluate evidence, and engage with learners (Hofer & Pintrich, 1997). Teaching-learning conceptions (TLCs), by contrast, capture beliefs about the roles of teachers and students, the purposes of education, and the strategies most likely to foster learning (Chan & Elliott, 2004). Together, these constructs shape classroom practices, professional identities, and the broader implementation of educational reform.

Research has consistently shown that sophisticated epistemological beliefs, such as viewing knowledge as complex, evolving, and open to justification, are associated with constructivist

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teaching-learning conceptions that prioritise inquiry, collaboration, and critical reflection (Brownlee et al., 2001; Cheng et al., 2009). Conversely, more naïve epistemological assumptions often align with transmissive conceptions, in which knowledge is treated as fixed and teaching as the delivery of information. These patterns underline the importance of investigating EBs and TLCs in teacher education, where the cultivation of reflective, adaptive, and student-centred approaches remains a global challenge.

Although epistemological beliefs and teaching-learning conceptions have been widely studied in Western contexts, research in non-Western settings remains limited. In Myanmar, for instance, teacher education has long been dominated by traditional, exam-oriented practices that privilege rote learning and teacher authority (Soe et al., 2017). Recent reforms, articulated in the National Education Strategic Plan (2016–2021), aim to shift towards student-centred learning and 21st-century skills (Pyae Kyaw & Kimmel, 2023). This reform context provides a unique opportunity to examine how epistemological beliefs and teaching-learning conceptions intersect in ways that may both enable and constrain educational transformation. By situating Myanmar within broader theoretical and empirical discussions, this review contributes to the effort to diversify and contextualise research on teacher beliefs.

The purpose of this article is to synthesise key theories and empirical findings on EBs and TLCs while foregrounding their relevance to Myanmar’s teacher education system. In doing so, it highlights both established debates and emerging directions in the field, offering insights for policy, practice, and future research.

Conceptual Foundations

1. The Nature of Beliefs in Education

Beliefs constitute deeply held assumptions that influence how individuals interpret experiences and guide their actions (Rokeach, 1968). In contrast to knowledge, which is typically subject to empirical validation and collective consensus, beliefs are personal, subjective, and often resistant to change (Nespor, 1987). Within education, beliefs function as interpretive filters: they shape how teachers approach instructional decisions, frame classroom interactions, and evaluate pedagogical innovations (Pajares, 1992; Richardson, 1996). For student teachers, beliefs about knowledge and teaching are particularly consequential because they form the foundation of professional identity and serve as predictors of future practice.

Educational beliefs are formed early, often during what Lortie (1975) termed the “apprenticeship of observation,” where individuals accumulate implicit theories about teaching through years of schooling as learners. These beliefs are typically emotionally charged, context-dependent, and resistant to revision (Nespor, 1987). As a result, teacher education programs must address not only the acquisition of knowledge and skills but also the transformation of entrenched belief systems if they are to foster meaningful change in practice (Richardson, 1996).

2. Belief Change and Conceptual Change

Beliefs, while relatively stable, are not immutable. Research in psychology and education has examined how beliefs evolve in response to new experiences, evidence, and reflection. Bendixen (2002) identified three conditions for belief change: dissatisfaction with existing assumptions, exposure to viable alternatives, and opportunities for critical reflection. Similarly, Vosniadou (1994) argued that transformative shifts require supportive environments where learners can reconcile contradictions between prior understandings and new perspectives. Yet, belief change is often emotionally and cognitively demanding, particularly when it challenges core assumptions linked to identity or professional roles (Sharot et al., 2011).

Closely related is the concept of conceptual change, which refers to the restructuring of knowledge frameworks in response to evidence-based reasoning (Kimmel, 2007). Whereas belief change may occur without empirical justification, conceptual change requires deliberate cognitive conflict and engagement with structured learning experiences. The two processes are interdependent: exposure to new pedagogical theories in teacher education can trigger both reconsideration of epistemological beliefs and reorganisation of disciplinary knowledge. In practice, however, achieving such change is complex. Even when student teachers adopt more sophisticated beliefs, they may revert to traditional practices under the pressure of conservative school cultures and societal expectations (Nahalka, 1997). This underscores the need for sustained professional support to ensure that belief and conceptual change translate into lasting instructional innovation.

Epistemological Beliefs

1. Defining and Theorizing Epistemological Beliefs

Epistemological beliefs (EBs) refer to individuals' assumptions about the nature of knowledge and the processes of knowing (Hofer & Pintrich, 1997). They shape how learners evaluate evidence, justify claims, and approach problem-solving. Within educational contexts, these beliefs influence both teachers' instructional decisions and students' approaches to learning, making them a central concern in teacher education (Fives & Buehl, 2008; Schommer-Aikins, 2004).

Early research conceptualized EBs as developing through a sequence of stages. Perry's (1970) scheme, based on longitudinal work with Harvard undergraduates, proposed a progression from dualism (viewing knowledge as absolute truths) to relativism and, ultimately, contextual commitment. Belenky et al. (1986) extended this trajectory with their *Women's Ways of Knowing*, emphasizing how social and gendered experiences shape epistemological development. Later, Baxter Magolda (1992) and King and Kitchener (1994) further elaborated stage-based models, linking epistemological growth with identity development and reflective judgment.

Challenging the notion of a single, hierarchical path, Schommer (1990) proposed a multidimensional model. Rather than a unified construct, she argued that epistemological beliefs comprise distinct dimensions that can develop independently, including the certainty of knowledge (absolute vs. evolving), the simplicity of knowledge (discrete facts vs. complex concepts), the source of knowledge (authority vs. reason), and the speed and control of learning (quick learning vs. effortful development; fixed ability vs. improvable skills). This reconceptualization shifted the field toward

more nuanced understandings of how beliefs function across different contexts and domains.

Subsequent research, notably by Hofer and Pintrich (1997), refined these frameworks by distinguishing between beliefs about knowledge (e.g., certainty, simplicity) and beliefs about knowing (e.g., justification for claims, reliance on authority vs. reasoning). Chan (2006) further emphasised cultural influences, showing that beliefs about effort and innate ability can also be integral components of epistemological worldviews in non-Western settings. These developments highlight that EBs are not only cognitive structures but also socially and culturally embedded perspectives.

2. Evolution and Current Directions

Since the 1990s, research on epistemological beliefs has expanded along several trajectories. One line has examined the relationship between EBs and learning outcomes, showing that sophisticated beliefs are associated with deeper comprehension, self-regulated learning, and critical thinking (Buehl & Alexander, 2001). Another has explored the domain-specificity of EBs, with evidence suggesting that individuals may hold more advanced beliefs in one discipline (e.g., science) while maintaining naïve beliefs in another (e.g., history) (Muis, 2004; Buehl & Alexander, 2001).

More recently, person-centred approaches have identified distinct profiles of epistemological beliefs among students and teachers, revealing that belief systems often cluster in patterned ways rather than existing along a single continuum (Korom et al., 2023). These studies underscore the variability and context-dependence of epistemological thinking. In addition, interdisciplinary work has drawn on feminist and social epistemology, situating EBs within broader discussions of culture, identity, and power relations (Hofer & Bendixen, 2012; Fasco et al., 2024).

Particularly relevant to teacher education is the finding that EBs are malleable yet resistant: they can evolve through exposure to new ideas and reflective practice but often revert under institutional pressures. This tension is visible in contexts like Myanmar, where reforms encourage student-centred pedagogies, yet deeply ingrained teacher-centred traditions persist. Research on Myanmar student teachers has shown that while many endorse constructivist ideas, their epistemological beliefs about the source of knowledge often remain authority-driven (Pyae Kyaw, 2022; Pyae Kyaw & Kimmel, 2023). This illustrates how cultural and institutional environments shape the trajectory of epistemological development and highlights the importance of situating EBs within specific sociocultural contexts.

Teaching-Learning Conceptions

1. Defining and Theorizing TLCs

Teaching-learning conceptions (TLCs) encompass the beliefs and assumptions that teachers hold about the purposes of education, the roles of teachers and students, and the instructional strategies most conducive to learning (Chan & Elliott, 2004; Samuelowicz & Bain, 1992). These conceptions reflect broader pedagogical philosophies and strongly influence classroom practices

and professional identity.

A consistent distinction in the literature is between teacher-centred (or transmissive) conceptions and student-centred (or constructivist) conceptions. Teacher-centred orientations view teaching as the delivery of knowledge, with students positioned as passive recipients. By contrast, student-centred orientations regard teaching as the facilitation of learning, where students actively engage in constructing meaning through inquiry, collaboration, and critical reflection (Trigwell & Prosser, 1993; Chan & Elliott, 2004).

Theoretical perspectives on TLCs are closely linked to learning theories. Behaviourism underpins transmissive conceptions, emphasizing stimulus-response conditioning and measurable outcomes (Skinner, 1953). Cognitivism shifted attention to internal processes such as memory and schema development, framing learning as the reorganisation of information (Anderson, 1994). Constructivism, in turn, emphasises the active role of learners in building knowledge through experience and social interaction (Piaget, 1977; Vygotsky, 1978). While these paradigms are often contrasted, in practice teachers may draw eclectically from each, reflecting the complexity of educational contexts.

2. Empirical Insights

Empirical studies consistently link constructivist conceptions of teaching with practices that promote deep learning, critical thinking, and collaborative problem-solving (Brooks & Brooks, 1999;., 2009). Teachers with student-centred conceptions tend to use formative assessment, group work, and inquiry-based tasks, whereas those with transmissive orientations rely more on lectures, rote learning, and high-stakes testing (Black & Wiliam, 1998; Fraser, 2012).

TLCs are also shaped by cultural and institutional contexts. For example, research in East Asian settings has shown that collectivist traditions can coexist with student-centred practices, producing hybrid approaches that blend authority with facilitation (Chan, 2006). In Myanmar, traditional teacher-centred pedagogy has long dominated, emphasizing memorization and exam preparation (Soe et al., 2017). However, recent studies suggest a gradual shift: student teachers increasingly endorse more constructivist views, recognising the importance of critical thinking and creativity (Pyae Kyaw, 2022). This shift reflects broader policy reforms, particularly the National Education Strategic Plan (2016–2021), which seeks to align classroom practices with 21st-century competencies (Pyae Kyaw & Kimmel, 2023).

Overall, TLCs function as a bridge between teachers' epistemological assumptions and their enacted practices. Understanding how these conceptions are formed, sustained, and transformed is therefore critical for educational reform efforts, particularly in contexts undergoing systemic change.

Interrelationship Between EBs and TLCs

The relationship between epistemological beliefs (EBs) and teaching-learning conceptions (TLCs) has been widely discussed in both theoretical and empirical research. At a theoretical level,

models of epistemological development, such as Perry's (1970) scheme, suggest that as individuals progress from dualistic to relativistic understandings of knowledge, their approaches to teaching and learning also shift. Those holding more sophisticated epistemological beliefs are more likely to adopt student-centred conceptions of teaching, emphasizing inquiry, problem-solving, and collaborative learning, rather than transmissive methods focused on memorization and authority.

Schommer's (1990) multidimensional model similarly illustrates how specific epistemological assumptions shape teaching orientations. For instance, teachers who view knowledge as certain and handed down by authority figures often favour teacher-centred strategies, while those who see knowledge as complex and evolving are more inclined towards constructivist approaches. Hofer and Pintrich (1997) further highlighted the role of justification in knowing: teachers who expect claims to be supported by evidence are more likely to encourage critical reflection and dialogic learning in their classrooms.

Empirical research reinforces these theoretical links. Brownlee et al. (2001) found that preservice teachers with more sophisticated epistemological beliefs were also more likely to endorse constructivist teaching-learning conceptions. Chan and Elliott (2004) reported similar findings among Chinese student teachers, showing that naïve beliefs about knowledge correlated with transmissive orientations, while sophisticated beliefs aligned with constructivist approaches. These studies underscore that the two constructs are not independent but mutually reinforcing: epistemological assumptions shape conceptions of teaching, which in turn guide classroom practices.

In Myanmar, this interrelationship has particular significance. Although reforms under the National Education Strategic Plan emphasise student-centred pedagogy, many student teachers continue to hold authority-driven epistemological beliefs, especially regarding the source of knowledge (Pyae Kyaw, 2022; Pyae Kyaw & Kimmel, 2023). This tension reflects how deeply ingrained cultural traditions of teacher authority interact with reform initiatives promoting constructivist learning. Understanding this interplay is crucial for designing teacher education programs that not only encourage constructivist teaching-learning conceptions but also foster the epistemological shifts needed to sustain them.

Implications for Teacher Education and Policy

Understanding the interplay between epistemological beliefs and teaching-learning conceptions carries important implications for teacher preparation and educational reform. Because beliefs act as filters that shape how new information is interpreted (Richardson, 1996), teacher education programs must explicitly engage with student teachers' assumptions rather than treating them as neutral or secondary concerns. Without deliberate attention, entrenched beliefs formed during the "apprenticeship of observation" (Lortie, 1975) may persist, limiting the impact of reform-oriented curricula.

One implication is the need for reflective practice in teacher education. By encouraging preservice teachers to critically examine their assumptions about knowledge and learning, programs can foster greater alignment between espoused theories and enacted practices (Brownlee et al.,

2001). Reflection, however, must be supported by opportunities to test and apply new approaches in authentic classroom settings, otherwise belief change risks remaining superficial (Bendixen, 2002; Tillema & Knol, 1997).

A second implication concerns the design of teacher education curricula. In Myanmar, reforms emphasise constructivist teaching methods (Soe et al., 2017; Pyae Kyaw & Kimmel, 2023), but achieving this requires programs that integrate theoretical perspectives with practice-based learning. Courses that combine exposure to alternative pedagogies with structured teaching practice can provide the cognitive conflict and reinforcement necessary for both belief and conceptual change (Vosniadou, 1994; Nahalka, 1997).

Finally, implications extend to policy initiatives. Professional development that continues beyond initial training is critical for sustaining change. Even when preservice teachers develop more sophisticated epistemological beliefs during their studies, they may revert to transmissive practices once they enter school environments dominated by tradition and exam pressure (Nahalka, 1997; Pyae Kyaw, 2022). Policies that support mentorship, collaborative learning communities, and long-term reflection can therefore help sustain reforms and prevent regression into established patterns.

In short, addressing epistemological beliefs and teaching-learning conceptions is not an optional complement to teacher education, but a central element of meaningful educational reform. This is especially evident in Myanmar, where reform goals depend on equipping student teachers with the capacity not only to adopt new pedagogies but also to revise the underlying beliefs that guide their professional practice.

Taken together, these implications highlight that transforming teacher education requires more than the transmission of new methods; it involves reshaping the beliefs that underpin instructional decisions. As Myanmar's reforms illustrate, aligning classroom practice with student-centred approaches depends on sustained support for belief and conceptual change, both during initial preparation and throughout teachers' professional careers. Yet, important questions remain about how these processes unfold across different contexts, cultures, and stages of professional development. Addressing these gaps requires a more systematic research agenda, which the next section will outline.

Future Research Directions

Although considerable progress has been made in understanding epistemological beliefs and teaching-learning conceptions, several gaps remain that warrant further investigation. Expanding the research agenda will not only strengthen theoretical insights but also provide practical guidance for teacher education and reform.

1. Understudied Contexts

Much of the existing research has been conducted in Western higher education settings, with relatively few studies in non-Western contexts (Chan, 2006; Chan & Elliott, 2004). In Myanmar,

where traditional teacher-centred practices remain dominant (Soe et al., 2017), recent studies indicate a gradual shift toward more constructivist orientations (Pyae Kyaw, 2022; Pyae Kyaw & Kimmel, 2023). Further research is needed to understand how local cultural traditions, institutional structures, and reform initiatives shape the development of EBs and TLCs. Comparative studies across regions could also illuminate how different contexts influence the relationship between beliefs and teaching practices.

2. Longitudinal Research

Most studies of EBs and TLCs rely on cross-sectional designs, offering only snapshots of beliefs at a single point in time (Hofer & Pintrich, 1997; Schommer, 1990). Longitudinal approaches are needed to capture how beliefs evolve across the trajectory of teacher education and into professional practice. Tracking student teachers from entry into their programs through their early years in the classroom would provide valuable insights into when and how belief and conceptual change are most likely to occur, as well as the conditions that sustain or undermine these changes over time.

3. Interdisciplinary Approaches

Epistemological beliefs and teaching-learning conceptions intersect with broader issues of psychology, sociology, and cultural studies. For example, Belenky et al. (1986) highlighted how gender and social experience shape ways of knowing, while Chan (2006) emphasised cultural dimensions of epistemology. Future research should build on these insights by adopting interdisciplinary perspectives that connect individual belief systems with the social and cultural environments in which they are embedded. Such approaches would enrich understanding of how beliefs are formed, negotiated, and transformed in diverse educational contexts.

4. Technological Integration

The increasing use of digital technologies in education raises new questions about how EBs and TLCs are shaped in online learning environments. While much existing research predates this shift, examining how beliefs about knowledge and learning adapt in response to digital platforms is increasingly relevant. Investigating, for instance, how online collaboration influences beliefs about the source of knowledge, or how digital assessment practices shape teaching-learning conceptions, could extend the field in important ways.

Conclusion

Epistemological beliefs and teaching-learning conceptions are fundamental to understanding how teachers interpret knowledge, design instruction, and enact educational reform. Research demonstrates that sophisticated beliefs about the nature of knowledge often align with constructivist conceptions of teaching and learning, while naïve beliefs tend to reinforce transmissive approaches (Brownlee et al., 2001; Chan & Elliott, 2004). These interconnections

highlight that teacher education cannot be limited to the acquisition of new methods but must also engage with the deeper assumptions that shape professional practice.

In Myanmar, this challenge is particularly salient. Traditional authority-driven models of teaching have long shaped classrooms (Soe et al., 2017), yet reforms under the National Education Strategic Plan call for student-centred, inquiry-based approaches (Pyae Kyaw, 2022; Pyae Kyaw & Kimmel, 2023). The success of these reforms depends not only on curriculum change but also on the capacity of teacher education programs to foster belief and conceptual change. Addressing this requires reflective practice, ongoing support, and policies that sustain innovation beyond initial training.

By situating Myanmar within the broader literature on EBs and TLCs, this review contributes to diversifying the field and foregrounding the importance of cultural and institutional contexts. It underscores the need for future research that examines understudied populations, employs longitudinal designs, and integrates interdisciplinary and technological perspectives. Ultimately, deepening our understanding of epistemological beliefs and teaching-learning conceptions offers a pathway toward more responsive, equitable, and transformative teacher education.

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