

Beyond the Tools: How Beliefs, Acceptance, and Competencies Shape Educational Use of Generative AI

Abstract

Generative artificial intelligence (genAI) has the potential to transform the teaching profession (Kasneci et al., 2023). However, its impact on teaching and learning seems to depend more on the human factors than on the technology itself (Song et al., 2025). Hence, the overall research question of this symposium is:

How do non-technical aspects shape (pre-service) teachers' professional development with genAI?

The three contributions of this symposium address this research question from complementary perspectives: how epistemic beliefs predict pre-service teachers' engagement with genAI; how genAI supports school counseling training; and how genAI use reshapes teachers' genAI-related competencies. The studies show that the quality of genAI use depends on (pre-service) teachers' cognitive, epistemic, and reflective dispositions. While genAI may support professional development, there is a risk of de-skilling when it is used uncritically as an efficiency tool; successful integration therefore requires epistemic awareness, reflective judgment, and purposeful co-creation.

The contribution **'How Epistemic Beliefs Shape Pre-service Teachers' Use of Generative AI in Education: A Cognitive-Technological Perspective'** examines how pre-service teachers' epistemic beliefs (Schommer, 1990), i.e., assumptions about the nature and justification of knowledge, influence their use of genAI. Surveying 112 pre-service teachers and using structural equation modeling and latent profile analysis, the study identifies two dimensions of genAI use: analytical tasks and reasoning-related tasks. Pre-service teachers with more naïve epistemic beliefs, characterized by a preference for simplicity, certainty, and low tolerance for uncertainty, tend to use genAI more frequently, especially for reasoning tasks. Technology acceptance (Venkatesh et al., 2003) remains the strongest predictor of genAI use, but epistemic belief profiles add significant explanatory power. Three genAI-use profiles and two epistemic-belief profiles emerge, showing significant associations: pre-service teachers with more naïve epistemic beliefs are overrepresented in the high-use genAI group. The

findings highlight risks of superficial engagement and emphasize that effective genAI integration in education requires not only technical skills but also fostering reflective, critical epistemic stances. We argue for embedding epistemic-belief development into AI literacy initiatives to promote responsible and high-quality genAI use (Wu et al., 2025).

The contribution **‘Chatbots in the Professional Training of Counselors’** investigates how genAI-based chatbot simulations can enhance school counseling training as part of teachers’ professional development. The development of professional expertise in counseling requires sustained practice, exposure to diverse and challenging cases, and opportunities for reflection. Traditional training methods such as role-play meet these requirements only in a limited way (Smith, 2009). Recent advances in genAI suggest that chatbots may offer a promising supplement to established approaches. Chatbots can simulate a wide range of conversations, allow learners to experiment in a protected environment, and provide immediate feedback, thereby supporting deliberate practice and reflective learning ([blind1]). The ongoing study explores the potential of chatbots for acquiring counseling-relevant competencies. Novices in the field of school counseling (N = 58) participated in counseling courses that employed either role-play or chatbot-based simulated conversations. Participants completed questionnaires at three measurement points assessing counseling-related skills, and self-efficacy, as well as their evaluations of the training. Preliminary results suggest positive effects on counseling competence and self-efficacy. Chatbot-based simulations were perceived as more realistic and more challenging than role-play, and the feedback received was rated as more differentiated. At the same time, limitations were identified, such as repetitive conversational loops. Overall, the findings highlight both the potential and constraints of genAI-based chatbots for professional learning.

The contribution **‘How the Use of AI Tools Transforms Teachers’ AI-Related Competencies: A Comparative Study of Europe and China’** addresses how teachers’ use of genAI shapes their professional competencies. Current debates on genAI in education often focus on formal training and institutional implementation (e.g. Riggs, 2025). However, many teachers have already integrated genAI tools into their daily professional practice. This use is accompanied by informal learning opportunities and may influence their professional competencies.

Drawing on the concept of Re-Skilling (Raffner et al. 2022; [blind2]), the study conceptualizes genAI-driven Re-Professionalization as comprising processes of Re-Skilling, Up-Skilling, and De-Skilling. Re-Skilling refers to acquiring new technical knowledge about genAI, Up-Skilling to refining existing competencies such as context-sensitive prompting, and De-Skilling to the potential loss of skills, for example reduced creativity when genAI supports lesson planning. Semi-structured interviews (N = 41) were conducted with teachers in Europe and China. The findings show both shared and context-specific patterns. Across both contexts, teachers report gaining technical knowledge about genAI and developing more advanced interaction practices, including prompting and adapting genAI-generated outputs. At the same time, potential De-Skilling effects emerge, such as growing dependency on genAI-supported lesson preparation and limited critical reflection on generated content. The comparative perspective indicates that these transformations are shaped not only by the technology itself but also by institutional and cultural conditions. Notably, stronger Up-Skilling tendencies appear when teachers use genAI as a co-creative sparring partner rather than merely as an efficiency tool.

References

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