

Chapter 11

Challenges and Innovations in Developing PCK Among Pre-Service Teachers

Xuan-Hoa Nghiem

 <https://orcid.org/0000-0003-2292-0257>

Vietnam National University, Vietnam

Dhanashree Tharkude

Dr. Vishwanath Karad MIT World Peace University, India

Neeti Goyal

 <https://orcid.org/0000-0003-0007-4213>

University of Petroleum and Energy Studies, Dehradun, India

Ajay Chandel

 <https://orcid.org/0000-0002-4585-6406>

Lovely Professional University, India

Shashank Mittal

O.P. Jindal Global University, India

ABSTRACT

This chapter explores the development of Pedagogical Content Knowledge (PCK) among pre-service teachers, highlighting the challenges and innovations that shape their growth. Through detailed case studies, including the integration of technology, differentiated instruction, and culturally responsive teaching, the chapter examines effective strategies and the role of mentorship in enhancing PCK. It identifies

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common themes such as the importance of adapting teaching methods to diverse learner needs and the impact of reflective practice. Future directions emphasize the need for incorporating advanced technologies, data-driven instruction, and social-emotional learning into PCK frameworks. The chapter concludes by underscoring the significance of ongoing innovation and support in teacher preparation to improve educational outcomes.

INTRODUCTION

The best way to appreciate the importance of Pedagogical Content Knowledge is to look at where the concept came from, and how it has evolved in terms of its concept. Pedagogical Content Knowledge was a term first coined by Lee Shulman during the 1980s, when discourse about teacher education largely revolved around the issue of a divide between content knowledge and pedagogy (Aydın et al., 2014). It is by this kind of divide that Shulman's conceptualization of PCK was radical, arguing that effective teaching called for not only deep subject matter knowledge but also an understanding of how to convey it in ways comprehensible and engaging to students. The place where the two—content and pedagogy—connect defines PCK and makes it a unique form of knowledge central to the professional practice of teaching.

For Shulman, PCK was more than the simple combination of subject matter knowledge and general pedagogical strategies. It incorporates an understanding of how specific topics, problems, or issues within a particular subject are best taught and understood by students. It involves knowing what makes particular topics easy or hard to learn, how students of different ages and with different experiences form conceptions and preconceptions about the subject matter, and the strategies most likely to prove effective in teaching it (Aydeniz & Kirbulut, 2014). Thus, PCK is highly contextual and does not just differ between subjects but also between topics within a subject area. Thus, PCK development is complex, making this a challenging but very essential component of teacher education. The contribution of PCK to teacher education cannot be underrated. As part of their education, pre-service teachers have to learn how to navigate this intricate balance between the mastering of content knowledge and the pedagogical skills to deliver such content. PCK offers a framework in which such balance may be achieved. It equips the pre-service teacher with the wherewithal to translate the subject matter into teachable content and attune it to the diverse needs of their students. This is the transformative process underlying any act of effective teaching, what really makes the difference between the novice and the expert teacher (Sen & Demirdöğen, 2023). Expert teachers not only possess subject matter knowledge but are also able to make, with remarkable

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