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Rethinking STEM Teacher Education through a Motivational Lens

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Abstract

This paper explores the motivational impact of Continuous Professional Development (CPD) and Initial Teacher Education (ITE) in STEM education, drawing on data from the EU-funded ICSEA project. This study adopted a qualitative, exploratory multiple-case study design to investigate the role of professional learning activities in fostering teacher motivation across diverse educational settings. Based on case studies from 13 European countries, it examines teacher feedback to identify which aspects of CPD and ITE sessions foster motivation and engagement. This paper proposes a reframing of STEM teacher education design by foregrounding teacher motivation as a critical element of effective CPD and ITE. Using Self-Determination Theory (Deci & Ryan, 2000) and Clarke and Hollingsworth's (2002) model of teacher growth as theoretical frameworks, the analysis highlights the importance of relevance to classroom practice, real-world applicability, and the use of inquiry-based and collaborative pedagogies. Teachers reported higher motivation when sessions offered practical strategies aligned with their professional goals, were accessible in format and scheduling, and incorporated opportunities for reflection and peer exchange. However, challenges remain in balancing theoretical depth with practical application. The findings emphasize that teacher-centred, context-sensitive approaches—featuring active problem-solving, interdisciplinarity, and user-friendly delivery—are key to sustaining engagement. This study offers insights for educators, program designers, and policymakers working to enhance both the quality and motivational impact of STEM teacher professional learning.

Keywords: cross-country analysis; initial teacher education; professional development; teacher motivation; thematic analysis