

# Pre-Service Teachers' Use of Artificial Intelligence Tools in Preparing for High-Stakes Licensure Examinations: A Qualitative Study

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## Abstract

The emergence of artificial intelligence (AI) tools has revolutionised various aspects of life, including the educational context, with significant implications for teacher education, particularly in the preparation for teacher licensure examinations. Despite these developments, there remains a dearth of empirical evidence on how pre-service teachers utilise AI tools in preparing for licensure examinations. To address this gap, the present study explored the use of AI tools by pre-service teachers in preparation for the teacher licensure examination at Bia Lamplighter College of Education in Ghana. Using activity theory, this research conceptualised preparation for the teacher licensure examination as a goal-oriented activity mediated by AI tools within sociocultural and institutional contexts. Employing a qualitative exploratory case study design, ten pre-service teachers were purposively selected for the study. Data were collected through semi-structured interviews and non-participant observation. Guided by the components of activity theory (community, object, subject, rules, tools, and division of labour), the data were analysed thematically. The findings revealed that pre-service teachers used AI tools for essay writing and language support, problem-solving and answer verification, conceptual understanding and clarification, cross-subject examination preparation, and question generation for examination practice. The study provides empirical evidence of the role of AI tools as key mediating artefacts that promote examination-oriented and self-directed learning among pre-service teachers in colleges of education in Ghana. There is, therefore, a need to integrate structured pedagogical and ethical guidance on the use of AI tools to support pre-service teachers' preparation for licensure examinations and their future professional practice.

**Keywords:** AI-Supported; Mediation; Pedagogy; Self-Directed