

Engaging Pre-Service Teachers in Asynchronous Learning: Evidence from a Systematic Review

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University teaching has progressively moved from traditional lectures to blended and online models in which core content is delivered asynchronously through curated digital resources (Talbert, 2017). This trend is also evident in Initial Teacher Education (ITE), where online and asynchronous learning experiences are now commonplace (Sheehan et al., 2025). Although effective lecture practices are well established (e.g., Harrington & Zakrajsek, 2017), evidence regarding effective practices for asynchronous learning in ITE teaching remains fragmented (Dyment & Downing, 2020). To inform the design of mathematics and science ITE subjects and enhance pre-service teacher learning, the authors (experienced teacher educators in a faculty transitioning to curated online learning) conducted a systematic literature review to identify evidence-based practices that support engagement in the asynchronous components of blended ITE programs. Guided by a structured search strategy and the PRISMA framework (Page et al., 2021), the review progressed through four stages: identification, abstract and full-text screening, and inclusion. The review identified practices and task characteristics that supported cognitive, affective, and behavioural engagement. Cognitive engagement refers to pre-service teachers' investment in learning through reflection, critical analysis, and problem solving; affective engagement encompasses emotional responses such as confidence, satisfaction, and belonging; and behavioural engagement is reflected in active participation and deliberate contributions to the learning environment. Three interrelated themes emerged: engagement was strengthened by intellectually demanding, carefully scaffolded tasks; many practices supported multiple dimensions of engagement simultaneously; and effective designs consistently promoted autonomy and personalisation through learner choice, self-pacing, and flexible pathways.

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