

Helper or Hinderer? GenAI's Role in the Pathway From University Students' Growth Mindset to Self-Regulated Learning: A Narrative Review

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Research Overview: GenAI now plays an important role in university students' academic learning, but how it shapes the pathway from growth mindset to self-regulated learning remains underexplored. This narrative review synthesises evidence to examine GenAI's role across the three SRL phases and their cyclical transitions, and proposes an integrative framework.

Background: The release of generative AI (GenAI) tools in late 2022 has rapidly reshaped higher education. However, the educational consequences remain theoretically underspecified. Empirical evidence indicates that GenAI can simultaneously enhance personalised scaffolding and metacognitive support (Xu et al., 2025) and induce metacognitive laziness (Fan et al., 2025), excessive cognitive offloading (Gerlich, 2025), and a decline in deeper engagement (Jose et al., 2025). The critical question is therefore not whether GenAI affects learning, but for whom, under what conditions, and through what mechanisms it helps versus hinders. The present review draws on three theoretical foundations. Growth mindset (GM) theory posits that learners who believe ability is developable engage more adaptively in learning (Dweck, 2017); extending this, Mendoza and Yan's (2025) Integrated Growth Systems Framework demonstrates that growth mindset directly shapes proactive learning practices, including self-regulated learning. Zimmerman's (2002) cyclical model conceptualises self-regulated learning (SRL) as three recursive phases, namely forethought, performance, and self-reflection, each feeding into the next. Dai et al. (2023) theorise GenAI as an enabler in higher education across three SRL-relevant dimensions: personalised learning analytics, real-time scaffolding and feedback, and ideation facilitation, while arguing that productive GenAI use itself requires metacognitive and self-regulatory competence. Despite these well-developed theoretical streams, existing reviews have not examined GenAI's role in the influence of university students' GM on the three distinct SRL phases or the cyclical transitions between them. The present review addresses this gap.

Purpose: This narrative review synthesises evidence across three adjacent literatures to articulate (1) how GenAI may act as both helper and hinderer in the influence of university students' GM on each of the three SRL phases, and (2) how GenAI's dual influence alters the cyclical transitions between phases, thereby reshaping the GM-SRL pathway.

Methods: Scopus and Web of Science searches (January 2026) identified no studies intersecting GM, SRL, and GenAI simultaneously. Evidence was therefore synthesised from three adjacent literature streams: the GM-SRL literature, the GenAI-SRL literature, and the GenAI-GM literature. For the GM-SRL and GenAI-SRL literatures, existing reviews served as the primary source pool, from which primary studies were screened and filtered by university samples and engagement with at least one SRL phase; this approach was adopted given the absence of primary studies intersecting all three constructs simultaneously. The GenAI-GM literature was searched directly, yielding four empirical studies. Findings across all three streams were then integrated thematically to address the research questions.

Results/Discussion: Synthesising across the three literature streams reveals a coherent picture of how GenAI may restructure the GM-SRL pathway. GenAI's helper-hinderer effects vary

systematically across the three SRL phases. In the forethought phase, the GM-SRL relationship is theoretically most robust; however, GenAI research has largely overlooked goal-setting and planning processes, and high-GM learners may use GenAI as a strategic planning advisor while low-GM learners risk outsourcing goal formation to it. In the performance phase, the helper-hinderer divergence is most mechanistically distinct: GenAI functions either as a strategy advisor supporting metacognitive engagement or as an answer generator inducing cognitive passivity. In the self-reflection phase, the GM-reflection link is already relatively attenuated among university students, and GenAI's provision of immediate responses further short-circuits self-evaluation. Across the cyclical transitions between phases, GenAI introduces three distinct mechanisms: in the forethought-to-performance transition, through plan internalisation versus offloading; in the performance-to-self-reflection transition, through AI feedback either enabling or pre-empting self-evaluation; and in the self-reflection-to-forethought transition, through AI-mediated mindset recalibration, whereby AI use experiences themselves reshape growth-oriented beliefs entering the next cycle. Together, these patterns suggest that the GM-SRL pathway is undergoing structural reorganisation in GenAI-integrated learning environments.

Building on this synthesis, the proposed framework carries implications for theory, practice, and future research. Theoretically, this review contributes an integrative framework situating GenAI's helper-hinderer roles within Zimmerman's cyclical SRL model, extending prior accounts by foregrounding within-cycle and cross-cycle mechanisms rather than treating GenAI as a static instructional tool. Practically, the framework suggests that educators and policymakers should attend not to GenAI adoption per se but to how mindset and self-regulatory engagement function as boundary conditions determining whether GenAI supports or undermines the learning process. Future research should subject the proposed framework to empirical scrutiny through experimental and longitudinal designs that directly examine the helper-hinderer mechanisms across the three SRL phases and their cyclical transitions.

Keywords: GenAI; growth mindset; self-regulated learning; higher education

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