

NAVIGATING GENERATIVE AI IN EDUCATION: EFFECTS ON STUDENTS' SELF-DIRECTED LEARNING AND CRITICAL THINKING

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Abstract

The rapid adoption of generative artificial intelligence (GenAI) has transformed how students access information, complete academic tasks, and manage their learning processes. This study examines the effects of GenAI use on students' self-directed learning and critical thinking skills. It employs a qualitative approach based on library research. Data were collected from reputable journal articles, academic books, and institutional reports identified through Scopus, ScienceDirect, SpringerLink, Taylor & Francis, and Google Scholar. The literature was analyzed using thematic content analysis involving identification, selection, classification, synthesis, and interpretation. The findings demonstrate that GenAI can function as a personalized learning assistant by helping students identify learning needs, formulate learning goals, understand complex concepts, explore alternative perspectives, and obtain immediate feedback. Reflective and purposeful use of GenAI can strengthen students' autonomy and promote interpretation, analysis, evaluation, inference, and problem-solving skills. However, passive and excessive use may lead to technological dependence, cognitive offloading, superficial understanding, violations of academic integrity, and uncritical acceptance of inaccurate or biased information. Therefore, the educational effects of GenAI are determined not only by the frequency of its use but also by students' purposes, AI literacy, self-regulation, verification practices, and instructional design. This study highlights the conceptual relationship between GenAI use, self-directed learning, and critical thinking within an integrated analytical framework. Higher education institutions should position GenAI as a cognitive scaffold rather than a substitute for students' intellectual effort. Universities should consequently develop responsible AI policies, authentic assessments, and AI literacy programs that emphasize fact-checking, ethical disclosure, reflective learning, and independent reasoning. Further empirical and longitudinal research is recommended to validate these relationships across disciplines and educational contexts.

Keywords: generative artificial intelligence, self-directed learning, critical thinking, higher education, AI literacy.

Introduction

The development of *generative artificial intelligence* (GenAI), especially since the advent of ChatGPT, has changed the way students search for information, understand material, complete assignments, and generate knowledge. GenAI can provide explanations tailored to user needs, summarize sources, compile ideas, generate