Generative Artificial Intelligence, Trust, Critical Thinking, and Cognitive Effort in Undergraduate Thesis Writing

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Abstract

This study examined the relationship between fourth-year students' trust in Generative Artificial Intelligence (GenAI) and their critical thinking and cognitive effort during undergraduate thesis writing at the School of Foreign Languages, Pingxiang University, P.R. China. An embedded mixed-methods design (QUAN–qual) was used, with the quantitative strand serving as the primary source of evidence and qualitative interviews with thesis advisers providing explanatory context. The study involved 120 fourth-year English and Business English major students and eight thesis advisers. It assessed GenAI trust in terms of reliability, transparency, and trustworthiness; critical thinking in terms of analysis, evaluation, and inference; and cognitive effort in terms of elaboration, organization, and metacognitive regulation. It also examined profile-based differences, relationships among the principal variables, and the predictive influence of trust in GenAI. The findings showed that students largely trusted GenAI, with trustworthiness highest and transparency lowest. Critical thinking was high overall, with inference and analysis at very high levels and evaluation comparatively lower. Cognitive effort was also high overall; metacognitive regulation and elaboration were very high, whereas organization was moderate. Significant differences in GenAI trust, critical thinking, and cognitive effort were found by major, gender, and thesis progress, but not by age or prior academic writing experience. GenAI trust was positively related to and significantly predicted both critical thinking and cognitive effort, although these findings were interpreted as predictive associations rather than causal effects. Advisers described students' use of GenAI as ranging from legitimate support to substantial substitution for student-generated work. They observed that GenAI could support reasoning when students actively questioned, verified, and revised its output, but uncritical reliance could encourage cognitive offloading, weak source verification, blurred authorship, and reduced independent reasoning.
The integrated findings supported the Proposed GenAI-Integration Framework for Undergraduate Thesis Writing, emphasizing cognitive ownership, transparent disclosure, source verification, process-based supervision, AI literacy, and responsible institutional guidance.

Keywords: Generative Artificial Intelligence, Mixed-Methods Research, Critical Thinking and Cognitive Effort, GenAI Trust, Cognitive Offloading, Academic Integrity, Chinese EFL Higher Education