Promoting Critical Thinking with a Digitally-enhanced Instructional Framework (Poster)

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Abstract

Critical thinking (CT) is widely recognized in educational policy and documents as an essential competency for university graduates to successfully compete in the 21st century global economy (Barak & Shahab, 2022; Kuhn, 2019). A number of frameworks have recommended the promotion of CT in higher education (e.g., OECD, 2022; Pellegrino & Hilton, 2012); i.e., a combination of cognitive skills – interpretation, analysis, inference, evaluation and self-regulation and having the disposition to employ them (Facione, 2015). However, none of the diverse policy documents have resulted in an accepted educational plan with guidelines that university instructors can lean on for integrating CT into subject instruction (Manalo, 2020). Moreover, much obscurity still remains regarding its practical role in higher education, especially in an era of digital teaching and learning (Ahern, 2019; Barak & Shahab, 2022). The purpose of the current study was to examine from a socio-cultural perspective, a newly designed digitally-enhanced instructional framework for promoting CT in science and engineering education. This raised the following research question: How is a digitally-enhanced instructional framework perceived to promote CT among science and engineering students from different cultural backgrounds? The study was conducted at a research university in Israel which offers degrees in science and engineering and its international branch campus in China. The students participating in the experimental group were guided by a newly designed instructional framework which encouraged CT through digital activities such as participating in discussion forums and polls or sharing opinions in a debate website. In order to address the research goal, the study applied a quasi-experimental design (Creswell, 2018) in which the data was collected via questionnaires from

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a convenience sample of 308 Chinese and Israeli students. For data analysis, a series of ANCOVA and Wilcoxon signed-rank tests were conducted. The findings revealed that both the Chinese and Israeli students who partook in the intervention perceived the newly designed instructional framework to encourage CT to a greater extent than the participants who studied according to a traditional approach for all of the CT skills. In particular, both the Chinese and Israeli students found there to be a clear focus on learning activities designed to enhance self-regulation in the new instructional framework compared to their peers following the traditional approach. Moreover, the current study shows that there weren't significant differences between the Chinese and Israeli students who underwent the intervention, indicating that cultural factors did not have an impact on the intervention.

Keywords: critical thinking, higher education, socio-cultural theory, digitally-enhanced learning.

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