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Embodied Interactive video lectures for improving learning comprehension and retention

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Abstract

Abstract
The increased interaction with multimedia content has been recognized as a significant factor to improve learners' learning outcomes. As a result, interactive video lectures are increasingly being adopted in digital learning contexts for increasing interactivity. However, conventional video lecture lacks interactive learning activities (ILAs) that are an indispensable component of interactivity. Interactive video lectures can provide learners opportunities to obtain timely constructive support to produce effective learning outcomes because of ILAs. In order to carefully design and create ILAs for effective learning, instructors need to invest substantial efforts for conceiving the content and interactions of ILAs. This study proposed an approach to design the content of ILAs by leveraging collective intelligence (CI) gathered from the discussion forums specifically related to the content of video lectures. When learners exercised ILAs, meaningful interactions by speaking and gesturing worked as learning support to improve comprehension of learning materials. To evaluate the effects of the CI-based ILAs, an experiment was conducted with 90 university students, who were randomly and equally assigned to three different groups (i.e., embodied interactive, non-embodied interactive, and conventional video lectures). The results show that learners who learned with the embodied interactive video lecture performed better in comprehension and retention of learning contents than the other two counter groups. The findings also revealed that this approach does not impose any additional cognitive load on learners. The design guidelines derived in this study can serve as reference for instructors to create interactive video lectures with CI-based ILAs in digital learning contexts.

Keywords: Architectures for educational technology system; Human-computer interface; Interactive learning environments; Pedagogical issues; Teaching/Learning strategies

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