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Reduced GUI for an interactive geometry software: does it affect students' performance?

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Summary: Purpose: The purpose of this paper is to describe an experimental study to reduce cognitive load and enhance usability for interactive geometry software. Design/methodology/approach: The Graphical User Interface is the main mechanism of communication between user and system features. Educational software interfaces should provide useful features to assist learners without generate extra cognitive load. In this context, this research aims at analyzing a reduced and a complete interface of interactive geometry software, and verifies the educational benefits they provide. We investigated whether a reduced interface makes few cognitive demands of users in comparison to a complete interface. To this end, we designed the interfaces and carried out an experiment involving 69 undergraduate students. Findings: The experimental results indicate that an interface that hides advanced and extraneous features helps novice users to perform slightly better than novice users using a complete interface. After receiving proper training, however, a complete interface makes users more productive than a reduced interface. Originality/value: In educational software, successful user interface designs minimize the cognitive load on users; thereby users can direct their efforts to maximizing their understanding of the educational concepts being presented.

Classification: U75 G45 G75 C35

Keywords: interactive geometry software; iGeom; graphical user interface; experimental study; interactive learning environment

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