

The Changing Face of Education: Development of a Pedagogic Computer Application and Its Effect on Student Cognition, Motivation, and Performance, Year Four

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Recently, educational institutions have transitioned from traditional instructional methods to computer-based practices. Research must be done to ensure these modifications are not negatively affecting students' learning. The aim of this study was to utilize teacher views on pedagogic technology in the conversion of a paper-based activity to an interactive, web 2.0 computer application and to test its effect on student cognition, motivation, and performance. A pre-study was conducted by surveying teachers on the usage and importance of technology in their classrooms. The results were implemented in the creation of a web 2.0 application by the researcher. For the primary study, 126 high school students were provided either the paper-based printout, a web 1.0 computer application, or the web 2.0 computer application to complete a lesson. The students answered a pre- and post-test, germane cognitive load survey with attached mental effort statement, and motivation survey. Paas and van Merriënboer's training efficiency formula was implemented as well. After analysis with ANOVA and t-tests, the results fail to reject the null hypothesis. There was no statistically significant difference between students' pre- and post-test scores, learning gains, mental effort, training efficiency, or all types of motivation between the methods. Only the students' germane cognitive load resulted in a significant difference in favor of the web 2.0 method. This suggests that research must guide the efficacious introduction of technology into educational settings. These pedagogic devices possess the ability to fill gaps and enhance the traditional classroom framework, thereby creating a dynamic blended learning environment.