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THE EFFECTS OF THE COMPUTER SIMULATIONS ON STUDENTS' LEARNING IN PHYSICS EDUCATION

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ABSTRACT

Broad acceptance of web-based software as a teaching-learning medium for processing information has opened new vistas in education by taking full advantage of learners' basic senses of learning such as visualizing 3D objects and fundamental concepts with applets. Applets provide animated, interactive and game-like environments in which students learn through exploration. Most of the applets are available on-line cover high school and college science courses. This study focuses on the technical and pedagogical benefits of more advanced-topics-related applets used in physics course. These applets emphasize the connection between real-life phenomena and the underlying science. Also, the effects of physics concept learning with computer simulations and traditional physics learning without computer simulations on students' achievement and attitude were compared. The study was performed on two groups (total 93 students) during one semester at a public university in the west of the Turkey. When the results obtained from the study were evaluated statistically, it was found that there was a significant difference in conceptual test between groups' scores in favor of the treatment group. Also, it could be concluded that the courses with computer based-activities have a positive effect on students' attitude. According to the results of this study, the present study suggests that carefully developed and tested educational applets in conjunction with real-equipments can be engaging and effective in students' understanding of the physics.

Keywords: Applets, computer simulation, educational technology, learning environment, physics education.