"THE TECHNOLOGY OF USING THE CROCODILE_PHYSICS PROGRAM IN TEACHING PHYSICS"

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Annotation: This study examines pre-service physics teachers' perception on computer-based learning (CBL) experiences through a virtual physics program. An Algodoo program and smart board was used in this study in order to realize the virtual environment. We took one specific physics topic for the 10 th grade according to the physics curriculum in Turkey. Archimedes`Archimedes`principle is one of the most important and fundamental concepts needed in the study of fluid mechanics. We decided to design a simple virtual simulation in Algodoo in order to explain the Archimedes' principle easier and enjoyable. A smart board was used in order to make virtual demonstration in front the students without any real experiment. There were 37 participants in this study who are studying pedagogical proficiency at Kırıkkale University, Faculty of Education in Turkey. A case study method was used and the data was collected by the researchers. The questionnaire consists of 28 items and 2 open-ended questions that had been developed by Akbulut, Akdeniz and Dinçer (2008). The questionnaire was used to find out the teachers`teachers`perceptions toward Algodoo for explaining the Archimedes' principles. The result of this research recommends that using the simulation program in physics teaching has a positive impact and can improve the students' understanding.

Key words: Studying pedagogical proficiency, Physics of Everyday Life, interactive engagement in class.

Introduction

During the spring of 2019, several PhET simulations were incorporated into the curriculum for The Physics of Everyday Life - a distribution course for non-science majors. Out initial experience with incorporating the PhET simulations into the classroom curriculum was very positive. As the instructors, we found that the simulations helped tremendously with communicating visual models, fostering conceptual development, illustrating everyday life phenomena that are not visible to the eye, and providing opportunities for interactive engagement in class. We also received positive feedback from the students with regard to how helpful they found the PhET simulations. We found improved student performance on the final exam compared with the previous year.

The Physics Education Technology (PhET) Project is a suite of online tools for teaching and learning introductory physics at the high school and college levels. Elaborate Java- and Flash-based simulations. Support for educators and students with resources for both teaching and learning with these simulations. Research to formally assess their influence on student learning and attitudes in a variety of settings. A large number of physics-related simulations exist and are being used in introductory physics courses around the country. In our efforts, we employ a design philosophy that compliments the other simulations available.

The PhET Project - an on-going effort to create a suite of interactive simulations and related education resources that aid in the teaching and learning of physics. Our immediate

objectives are: Continue to develop new simulations and to refine existing ones. Accompany each simulation with a tutorial or series of tutorials that provide a means for self-guided discovery of the physics principles. Provide resources for educators that include: Examples of learning goals that are well addressed by using the simulations. Lecture versions of each simulation with larger fonts and instructor control over configuration. Examples of use as a lecturing tool including suggestions for interactive lecture demos and peer instruction activities. Examples of homework assignments created to work with the simulations.

The PhET Project includes a substantial research effort to assess the effectiveness of these interactive simulations in a variety of educational environments, particularly in introductory physics courses and as stand-alone / informal educational tools. Research areas include: The simulations effect on students' ability to solve conceptual and quantitative problems. Student attitudes and beliefs: about learning physics about their own learning and of the simulations themselves. Influences on the effectiveness of the simulations as a learning tool. Student's interaction with the simulation (e.g. guided tutorial vs game-like challenge). The educational setting (e.g. groups vs nongroups).

Emphasize the connection between physics and everyday life. If students perceive the relevance to their lives, they are more likely to invest time in understanding the physics. If you teach physics in the context of everyday life applications, students are more likely to recognize other applications where physics enters their daily lives. Facilitate the development of accurate visual and conceptual models of the underlying physical principles. Through simulations, educators can more effectively share the mental pictures scientists have developed for how things work. Interactive simulations of physical phenomena aid in developing accurate conceptual models of the physics. Serve as a bridge between conceptual physics and abstract concepts of mathematical models, or between different forms of representation. Interactive simulations providing multiple visual representations of the same physical phenomena can help students recognize these connections and strengthen their overall understanding of the physics. Engage students through interactive exploration of the physics and through the creation of fun, game-like challenges. How the student interacts of engages with the simulation can impact their learning and their attitudes towards physics. Open model environment promotes student-driven inquiry. Use quantitatively accurate physical models for simulation behavior. Make physics accessible to a broader population. Simulations provide an alternative to traditional modes of teaching and learning physics Free, web-based simulations and education resources are valuable to educators.

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