The Effects of Computer Game-Based Pedagogy on Graduate Students Statistics Performance

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Abstract : A pretest-posttest within subjects experimental design was employed to examine the effects of a computerized basic statistics learning game on achievement and statistics-related anxiety of students enrolled in introductory graduate statistics course. Participants (N = 34) were graduate students in a variety of programs at state-funded research university in the Southeast United States. We analyzed pre-test posttest differences using paired samples t-tests for achievement and for statistics anxiety. The results of the t-test for knowledge in statistics were found to be statistically significant, indicating significant mean gains for statistical knowledge as a function of the game-based intervention. Likewise, the results of the t-test for statistics-related anxiety were also statistically significant, indicating a decrease in anxiety from pretest to posttest. The implications of the present study are significant for both teachers and students. For teachers, using computer games developed by the researchers can help to create a more dynamic and engaging classroom environment, as well as improve student learning outcomes. For students, playing these educational games can help to develop important skills such as problem solving, critical thinking, and collaboration. Students can develop an interest in the subject matter and spend quality time to learn the course as they play the game without knowing that they are even learning the presupposed hard course. The future directions of the present study are promising as technology continues to advance and become more widely available. Some potential future developments include the integration of virtual and augmented reality into educational games, the use of machine learning and artificial intelligence to create personalized learning experiences, and the development of new and innovative game-based assessment tools. It is also important to consider the ethical implications of computer game-based pedagogy, such as the potential for games to perpetuate harmful stereotypes and biases. As the field continues to evolve, it will be crucial to address these issues and work towards creating inclusive and equitable learning experiences for all students. This study has the potential to revolutionize the way basic statistics graduate students learn and offers exciting opportunities for future development and research. It is an important area of inquiry for educators, researchers, and policymakers and will continue to be a dynamic and rapidly evolving field for years to come.

Keywords : pretest-posttest within subjects, computer game-based learning, statistics achievement, statistics anxiety

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