Assessing the Impact of Computer Simulations on Physics and Chemistry Learning

Margarida Figueiredo[1], Catarina Rafael[2], José Neves[3,4], and Henrique Vicente[3,5(✉)]

[1] Departamento de Química e Bioquímica, Escola de Ciências e Tecnologia, Centro de Investigação em Educação e Psicologia, Universidade de Évora, Évora, Portugal
mtf@uevora.pt
[2] Colégio de Santa Doroteia, Lisboa, Portugal
[3] Centro Algoritmi/LASI, Universidade do Minho, Braga, Portugal
jneves@di.uminho.pt
[4] Instituto Politécnico de Saúde do Norte, CESPU, Famalicão, Portugal
[5] Departamento de Química e Bioquímica, Escola de Ciências e Tecnologia, REQUIMTE/LAQV, Universidade de Évora, Évora, Portugal
hvicente@uevora.pt

Abstract. Computer simulations offer a dynamic and flexible teaching strategy that can serve as a powerful tool for motivating students and educators to attain learning outcomes. This study aims to investigate the impact of a teaching strategy based on computer simulations on student learning, in comparison to the conventional one. This study include two classes of 10^{th} grade students from a secondary school in Lisbon, Portugal, with the primary objective of teaching a new topic (photoelectric effect). In the experimental group was used a teaching strategy based on the utilization of computer simulations, whereas in the control group the traditional methodology was adopted. Student learning assessment was conducted by administering a post-lesson test to both groups. The present study found that the use of computer simulation-based methodologies is more engaging for students than traditional teaching methods In fact, the experimental group achieved higher percentages of correct answers (ranging from 96.4% to 100%) compared to the control group (ranging from 70.8% to 83.3%).

Keywords: Computer Simulation · Physics and Chemistry Learning · Secondary Education

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