

Exploring Possibilities for Virtual Education: Three Studies in Progress

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Abstract: This poster presentation will outline three independent research projects that have been designed to evaluate the impact of 1) virtual manipulatives in biology, 2) virtual manipulatives in sport science case studies and 3) avatar virtual worlds for improving deaf students written English. The teaching models, research design and preliminary results will be shared with the participants.

Poster Introduction

This poster session will introduce three ongoing projects that examine the use of virtual contexts for learning. The first project concerns the use of object VRs (see full paper presentation elsewhere) in teaching taxonomy of turtles to Biology students in their first year of a Bachelor of Science program. A series of online models have been created that allow students to manipulate (mouse over) and magnify turtle specimens in the context of an online laboratory investigation. An action research approach has been taken to ascertain the relative impact of the approach as it relates to student attitude and performance.

The second project uses a similar object VR approach in studying sports injury. Virtual anatomical models have been created to support case study analysis of sports injury. The online anatomical models of the injury site can be manipulated and enlarged to investigate details of the skeletal-muscular structure. These object VRs are a component of the tools available to 3rd year university Kinesiology students as they assess a case study injury and propose appropriate treatment. An action research study has been planned to examine the impact of an ankle injury case. Preliminary field testing of the online case and associated object VR will be discussed. The intent of the work is to build a case study database and share it with students of sports science and the University of Technology in Kingston, Jamaica. Future studies will examine the potential for cultural factors to impinge on the success of the database/case study approach in the Jamaican context.

A distinctly different application of virtual worlds is examined in the third project. Deaf students in Jamaica traditionally have little success in passing written English examinations as part of senior matriculation. This has been attributed to the mismatch between proper written English and the colloquial form of sign language which Jamaican deaf students typically communicate through. This sign language is a variation of standard American sign language yet the truncated Jamaican form has led to trends of poor written English particularly in the grammatical area of conjunctions. This project proposes to employ an avatar system where students negotiate a virtual world of typical adolescent scenarios. The interface however will not allow students to “sign” in the virtual world without inputting grammatically correct English. The potential exists to improve students’ written English through this mastery learning-game approach. Computer programing avatars to “sign” has presented some technical challenges however a formal mixed method research study has been designed to assess student performance on regional English examinations as it correlates to use of the virtual world.

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