

Chapter 4.19

Blending Classroom Activities with Multi-User Virtual Environment for At-Risk Primary School Students in an After-School Program: A Case Study

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ABSTRACT

This chapter documents how a group of 14 academically at-risk Primary 5 students have been engaged in academic related tasks in an after-school program mediated by a game-like 3D multi-user virtual environment (MUVE), Quest Atlantis (QA). The case study explores the possibilities and potentials of using the game-like 3D MUVE for the re-engagement of this group of academically at-risk students. From the observation notes, interviews with the students and students' activities in the MUVE, the two main elements in the MUVE that have been found to engage the students are: 'play and fun' and 'recognition and affirmation of performance.' However, these engaging elements alone could not

purposefully engage these students. Non-ICT activities such as orientation tasks, support by teachers, and the careful selection of authentic assignments are necessary to further enhance their engagement with their learning.

INTRODUCTION

Various studies of Singapore schools have shown that the main factors that influence students' academic performance include socio-economic status and attitudes toward school life. However, there are studies that have shown that teachers and teacher knowledge do make a difference regardless of social background. Hill and Rowe (1998), and Cuttance (1998, p. 1158-9) indicate that 'up to 55% of the variation in individual learning outcomes lies be-

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tween classrooms within schools'. It would appear that if teaching effectiveness can be improved by developing teacher knowledge about how to engage students in richer and more relevant learning tasks, the outcomes for students will be improved. The focus on standards, grades, and outcome measures is in direct opposition to the idea of designing learning environments that are more likely to engage students. Learner engagement is paramount to learning success; where engagement entails mindfulness, intrinsic motivation, cognitive effort and attention. By undervaluing rich complex, and engaging, processes and strategies for learning, classroom activities that require active inquiry and deep conceptual understandings are often rare in schools.

By contrast, the gaming industry has informally engaged students and motivated them to invest significant amounts of time in tasks which relate to effective game play but not to tasks on which they are typically assessed. This revolution began with the simple two-dimensional arcade games and has progressed to the virtual reality three-dimensional (3-D) multi-user role-playing game of today. Harnessing the excitement and engagement among students playing computer games bears considerable potential for schools to capture the intensive engagement of students (Lim, Nonis, & Hedberg, 2006). 3D multi-user games with their multimedia elements situated within a community of players provide opportunities for players as learners to engage in literacy through modalities of interpretation and expression (Gee, 2003). This paper documents how a group of 14 academically at-risk Primary 5 students (aged 11) are engaged in academic related tasks in an after-school program mediated by a 3D game-like multi user virtual environment (*MUVE*)—*Quest Atlantis* (*QA*). At-risk students are those who constantly not performing up to the expected academic standards over the years. The findings suggest that for the after-school program to engage these students, the *MUVE* has to be supported by non-ICT face-to-face activities designed and carried out by the

teacher – taking up the learning opportunities and addressing the limitations of both virtual and face-to-face learning environments.

LITERATURE REVIEW

Quest Atlantis: Multi-User Virtual Environment

Quest Atlantis (*QA*) is a 3-D virtual learning environment developed by the Center for Research on Learning and Technology (CRLT) at Indiana University. The Center is committed to explore and develop appropriate applications of ICT to improve teaching and learning in diverse settings. This environment is built for students, ages of 8 to 12, who have given up on themselves as learners. It is the belief of CRLT that *QA* with its deep content and challenging game-like activities will motivate these academically at-risk students. Students explore and move around freely in the 3D virtual world as questers with their own avatars. There is also an online synchronous chat for students to discuss topics of interest and collaborative works. On the right hand side of this environment, students can access their emails, forums, view their accumulated points and *lumins*, *quests*, as well as update their personal information.

QA allows students to travel to various virtual spaces and carry out educational activities known as *quests*. Each *quest* is a curricular task designed to be entertaining and yet educational in nature. In order to complete these *quests*, students have to complete real world activities that are socially and academically meaningful. All *quests* involve both content-area findings and personal reflection by the student. This is done with the aim of fostering critical thinking and meta-cognition. Developers of *QA* believe that students learn best when they are actively engaged in the learning process, with an emphasis on inquiring into domain-related problems. The basic philosophy of inquiry-based learning is to make learning more

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