SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Ignition - Primary Space Education (1)

Author: Mr. Phillip Spencer
Victorian Space Science Education Centre, Australia, phillip.spencer@vssec.vic.edu.au

Mr. Ian Christie
Victorian Space Science Education Centre, Australia, ian.christie@vssec.vic.edu.au
Mr. Michael Pakakis
Victorian Space Science Education Centre, Australia, michael.pakakis@vssec.vic.edu.au
Prof. John Rankin
La Trobe University, Australia, j.rankin@latrobe.edu.au

STAR SEARCH: TEACHING ASTRONOMY USING SERIOUS GAMING

Abstract

The Victorian Space Science Education Centre (VSSEC) uses scenario-based learning in its *Mission to Mars*, *Mission to the Orbiting Space Laboratory* and *Primary Expedition to the M.A.R.S. Base* programs. The mission software associated with these programs was developed using a serious games platform which has been demonstrated as an effective methodology for developing critical thinking and problem solving, communication, collaboration and creativity in an interactive environment. This increased interaction stimulates a deeper understanding and the generation of new knowledge. VSSEC has also previously developed *Galactic Explorer*, a serious game exploring the nature of stars targeted at the senior secondary school level for its Astrophysics program.

Because the number of student visits to VSSEC is limited, VSSEC has worked with its university partners to develop a range of online programs that delivers the benefits of scenario-based learning using a games technology approach within a school environment.

With the success of *Galactic Explorer*, *Star Search* was developed as an intelligent game-based learning environment to provide an online game for middle years students (grades 5 to 8) that investigates stars. Students fly a spaceship to a range of stars to collect and analyse data; encouraging students to think and work scientifically, and contributing to the students' conceptual understanding of the science being applied. Students also encounter a range of hazards they have to navigate to successfully complete their mission.

From VSSEC's experience in serious games development, their effectiveness is enhanced when they are an integral part of a wider curriculum package. The program developed by VSSEC integrates a range of online curriculum materials, introducing pedagogical agents into a visually engaging environment that typify high end game platforms and embedding them in dynamically generated science narratives, it addresses the objectives of student achievement and engagement.

This paper will present the development of the program, including the involvement of university students in the writing of the software and the impact by embedding high yielding instructional strategies to improve student engagement and learning outcomes.