

Summary of the SPSU – MCAA Oceanography Game Development Project

Engaging young students in Science, Technology, Engineering, and Mathematics, the STEM disciplines, at the elementary school level is important if they are to develop interests in science and technology careers. This excitement should be strong enough to encourage them to take math and science in high school, so they are prepared to earn college degrees in these professions after graduation. The young students must be drawn to and engaged in these subjects in new and innovative ways.

To engage students in STEM through educational video gaming, Southern Polytechnic State University (SPSU) and Marietta Center for Advanced Academics (MCAA), in conjunction with Tech Matters, LLC., are collaborating to develop an educational oceanography video game for the 5th grade gifted students. The Oceanography Game allows the MCAA 5th grade gifted students to complete their spring semester oceanography section by playing a game in which they design a submersible, explore the ocean, and test certain hypotheses.

The Game: The Oceanography Game can be broken into three major areas: marine submersible design, ocean exploration, and cause and effect simulations. The player learns the fundamental design criteria for building submersibles. They must make tradeoffs concerning the design cost and exploration requirements. The player then uses his/her submersible to explore the ocean learning the biology, chemistry, and physics of the ocean (curricular requirements).

A simulation phase of the game, slated for summer of 2009 and into 2010, will allow students to use the knowledge they've learned through the Exploration Phase to see the effects man and other natural occurrence have on the oceans. For example, what happens in there is overfishing of a particular species? What are the observed effects? What are the ripple effects of taking action? What are the effects of taking no action?

Timeline: The goal is to have a prototype for the MCAA 5th Grade to use by their February/March 2009 spring semester for the oceanography section of the curriculum. Further development of the game and outreach to additional schools will begin as early as Summer 2009 and will continue through the 2009/2010 school year.

More Than a Just a Video Game: The educational aspects for both the SPSU college students and the MCAA students are broader than the game itself. Using authentic tools under the guidance of teachers, an MCAA Student Steering Team of ten students work with the SPSU game developers to design and support the roll out the game to the entire 5th grade. They are developing teamwork, collaboration, creativity, innovation, and leadership skills.

The SPSU game developers gain experience in teamwork, collaboration, leadership, communication, project planning, and time management. They also develop much needed soft skills required when working with clients.

With additional resources, the Oceanography Game will continue to evolve to include simulations. As the collaboration between SPSU and MCAA continues, the game will expand to include more engineering concepts, a greater diversity of marine biology, and complex simulations. This project can serve a model for further serious game development projects with other school systems.

The Oceanography Game project is establishing an ongoing relationship between a SPSU and the local school district in which the college software engineering students collaborate with younger students. Based on these experiences and ongoing interactions, these young students may find technical careers exciting and worth pursuing.