Georgia Institute of Technology

Learning Science and Math in a Virtual World

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Georgia Tech is taking the lead on creating a new virtual world to improve Science, Technology, Engineering and Math (STEM) education for all students, especially those with disabilities. The project is part of a National Science Foundation Alliance collaborative grant that partners Georgia Tech with the University of
Georgia as lead institutions. Georgia Perimeter College and three Georgia public school systems are also critical partners in the project.

Robert Todd and his research team in the Center for Assistive Technology and Environmental Access (CATEA) are creating a virtual island in the popular Second Life world that will be a place for students with any kind of disability to go and get help with STEM subjects. The project, known as the Georgia STEM Accessibility Alliance, or GSAA, will serve Georgia students from high school through graduate studies.

“We’re building a universally designed virtual world to give everyone better access to support in the STEM fields of study,” said Todd. “This island will focus on those students who may have a wide range of issues such as learning disabilities, blindness, motor skill problems or cognitive issues and it will allow them to have access to mentors, tutors and other resources to help them succeed in their courses.”

According to Todd, many students with disabilities are often kept out of STEM fields due to a lack of access to resources needed to help them with the subjects. This new virtual world will allow students to have access to these resources 24 hours a day, seven days a week, 365 days a year, from their own home or school computers, free of charge.

Todd notes “the most common type of disability seen in high school and college students is some form of learning disability. Research has shown that many of these students have superior intelligence, but are hampered by specific cognitive processing issues. Other students experience sensory or physical limitations, but likewise show a strong capacity for science and math. Our project is being designed to serve all these students through training, self-advocacy exercises, and most important, pairing students with mentors chosen to meet their needs.”

Students will be able to create an avatar or persona that reflects how they want to be perceived in this virtual world. It may mean that their disability is reflected in the avatar. For example, a blind person may have glasses and a cane or a guide dog. The student may also decide to create an avatar that has nothing to do with their disability – all is left to the student’s choice. “I expect to see some very creative and fun avatars,” says Todd. “Students like to express themselves in virtual worlds through dress, wearable technologies and any creative theme you can imagine.”

In addition to serving the needs of students in high school through graduate school, the GSAA virtual world will assist students through the transitions between them, whether that be a job, a two-year college, a four-year college or graduate school, through online fairs and other virtual activities.

The project will utilize other resources from Georgia Tech, like much of the expertise in the STEM fields that the Institute has across campus. Todd says that another piece of the puzzle is to make sure the GSAA tutors, teachers and professors understand how to teach students with disabilities.
“We are building training modules that will help advanced students, teachers and professors to know how to assist students with special needs,” said Todd. “We’ll also be there, along with our partners at UGA, to support them throughout the process.”

The virtual world is not a stand-alone project. There are plans to connect the GSAA to social networking sites that students are already using, such as Facebook and Twitter. These tools will have many uses, such as allowing students to receive reminders of upcoming sessions as well as alerts when certain tutors are available or upcoming college or job fairs begin.

This five-year, $3 million project will begin with cadres of students from Georgia Tech, the University of Georgia, Georgia Perimeter College and high school students from Gwinnett, Clarke and Greene counties. But the GSAA is being designed as a scalable model, replicable and “sized” to other institutions and geographic needs. Therefore, it has the potential for national impact.

This virtual world concept is unique because it will be able to be utilized by anyone, whether they have a disability or not. “We’re focusing strongly on Universal Design for Learning as our basis,” says Todd. “So the GSAA and its expansions will be equally helpful for students who have disabilities and those who don’t. We’re designing our resources to promote better education for all students who need help in STEM.”

Updates on the GSAA virtual world can be found at the CATEA site: [www.catea.gatech.edu](http://www.catea.gatech.edu)

**Related Links**

- [CATEA](http://www.catea.gatech.edu)

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