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New Alliance To Research Gaming in Math and Science Education

by Dave Nagel

Video games have always had and probably will always have their detractors. But there's a growing movement in academia and industry recognizing the value of this medium as an educational tool both inside and outside the classroom. This week, eight colleges and universities added their inertia to this movement, joining with Microsoft to launch a new alliance to study the benefits of gaming for math and science instruction and STEM equity.

The consortium, dubbed the "Games for Learning Institute," is being led by New York University and includes Columbia University, City University of New York (CUNY), Dartmouth College, Parsons, Polytechnic Institute of New York University, Rochester Institute of Technology, and Teachers College. These members are matching an investment from Microsoft Research of $1.5 million to provide a total of $3 million in funding for the effort.

This is not the first project to study the value of gaming in science and math education. In fact, just last month the United States Department of Education itself awarded a grant of $9.2 million to the Education Development Center, a non-profit education research organization, to study how video games can be used in middle school science instruction in the classroom. But the Games for Learning Institute is different from other recent research initiatives in that it's focused particularly on identifying which aspects of video games most engage students and on developing "relevant, personalized teaching strategies that can be applied to the learning process" based on the findings.

"While educational games are commonplace, little is known about how, why or even if they are effective," said John Nordlinger, senior research manager for Microsoft Research's gaming efforts, in a statement released Tuesday. "Microsoft Research, together with NYU and the consortium of academic partners, will address these questions from a multidisciplinary angle, exploring what makes certain games compelling and playable and what elements make them effective, providing critically important information to researchers, game developers and educators to support a new era of using games for educational purposes."

The research efforts of the consortium will focus on middle school STEM subjects and how video games might be used as learning tools. According to information released today, the research will involve a wide range of student populations but will pay particular attention to females and minority populations. DoE statistics and recent research show that females and some minority students are underrepresented in both the percentage of undergraduate STEM degrees received and the percentage of positions in STEM careers held. (For example, women account for less than 20 percent of all engineering degree recipients at every level, though on the whole women receive about 60 percent of all degrees awarded by colleges

and universities in the United States. (See "Women Lose Ground in IT, Computer Science" and "Report: STEM Gap Widens for Underrepresented Minorities" for further information and references. Some DoE statistics covering females in STEM majors can be downloaded in PDF format from the National Science Foundation's site here.)

A Sampling of Males Versus Females Receiving Undergraduate STEM Degrees

STEM Subject	Males	Females
Engineering (Aerospace, Chemical, Civil, Electrical, Industrial, Materials, Mechanical, and others)	52,936	13,197
Computer Science	39,329	11,235
Physical Sciences (Astronomy, Chemistry, Physics, and others)	8,610	6,420
Mathematics and Statistics	8,215	6,625
Psychology	19,103	66,833

Source: Department of Education, statistics for 2005, compiled by the National Science Foundation

"Middle school is a critical stage for students, a time when many are introduced to advanced math and science concepts," said Ken Perlin, professor of computer science in NYU's Courant Institute of Mathematical Sciences and founding director of the Media Research Laboratory at NYU, in a statement released Tuesday. "Many students become discouraged or uninterested and pour their time at home into gaming. Ironically, we think gaming is our starting point to draw them into math, science and technology-based programs."

Perlin will direct the Games for Learning Institute, which will be housed at NYU. NYU Associate Professor Jan Plass will co-direct the institute. Plass teaches educational communication and technology at NYU's Steinhardt School of Culture, Education, and Human Development.

Both NYU and Microsoft have engaged in educational gaming research in the past. Microsoft has put some $3 million toward educational gaming research and development through its Gaming Initiative since 2004. And NYU has embarked on several research projects in the past studying the impact of digital media on student learning. (Information on some past projects can be found here.)

"Technology has the potential to help reinvent the education process, and excite and inspire young learners to embrace science, math and technology," said Craig Mundie, chief research and strategy officer at Microsoft, speaking to faculty and students at NYU Tuesday. "The Games for Learning Institute at NYU is a great example of how technology can change how students learn, making it far more natural and intuitive."

We'll bring you further information about the initiative as it becomes available.

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