Gaining Independence Through Video Games

May 14 2008

Today's video games serve a multitude of functions ranging from entertainment to exercise and even education. Now, three graduates from Rensselaer Polytechnic Institute's Class of 2008 have created a game with an even more important purpose — to foster independence among disabled individuals.

Graduating seniors Jennifer Ash, Zach Barth, and Peter Mueller have led an interdisciplinary student team made up of programmers, game designers, character and level artists, electrical engineers, and music composers to create a groundbreaking interactive game simulation to help individuals with disabilities develop life skills and obtain increased autonomy.

Called the CapAbility Games Research Project, the students worked in collaboration with the Adult Services Division of the Center for Disability Services in Albany to develop a game that specifically addresses the needs of the center's consumers.

The game, called "Capable Shopper," simulates a shopping trip at a local Price Chopper. Players maneuver through the virtual grocery store — which is based on actual blueprints obtained from an area Price Chopper where the center's consumers often shop — using a specially designed joystick or a head mouse, depending on their individual mobility.

"The most difficult — and most rewarding — part of the game development process was creating something that was accessible to a

large group of people who had varying abilities," said Zach Barth, a dual computer systems engineering and computer science major. "Beyond that we created countless iterations of the game until we achieved something educational that was still really fun to play."

A computer monitor set up directly in front of the user simulates the layout of the store, and a second monitor to the left displays a virtual shopping list. Users start the game by selecting a meal they'd like to make — such as a spaghetti dinner, a holiday ham, or even rotini with alfredo lobster sauce — and complete it when they've found all the items on their list.

A player selecting mac 'n' cheese casserole, for example, is charged with finding ham, cheese, pasta, biscuits, and frozen vegetables to complete the meal.

Consumers at the center have successfully used the "Capable Shopper" game to practice learning their way around the supermarket, identifying the appropriate aisles in which to find items on their shopping list, and selecting specific items off of shelves.

"By creating this simulated learning environment, our students have given individuals with disabilities an engaging way to learn skills directly related to independence in their daily lives. Beyond that, they've gotten them excited about engaging with the real world," said Kathleen Ruiz, associate professor of electronic arts at Rensselaer, and faculty leader of the CapAbility Research Project. "Games like 'Capable Shopper' illustrate the potential for new gaming genres such as serious games that combine the strengths of interactivity with multimedia to provide engaging simulations in communication, education, and artistic expression, among others."

Following the success of "Capable Shopper," the students were asked to

install it in the Center for Disability Service's Adult Services Division so that it may be accessed by individuals at any time. A permanent installation was completed this week.

"It was great to be a part of the tech group at RPI, designing and organizing a video game for the Center for Disability Services," said Ron Hill, a consumer at the Center who has been involved in the project.

Barth, Ash, and Mueller worked on the CapAbility Research Project with teammates Darren Domingos '10, Ben Esposito '11, and Class of 2004 alumnus Brian Ratta and Class of 2007 alums Ben Frost and Terry Lucas.

Following graduation on May 17, 2008, Ash — a dual psychology and games and simulation arts and sciences major — and Barth plan to take jobs at IBM and Microsoft, respectively. Mueller, a design, innovation and society major, plans to spend the summer traveling in Beijing.

Source: Rensselaer Polytechnic Institute