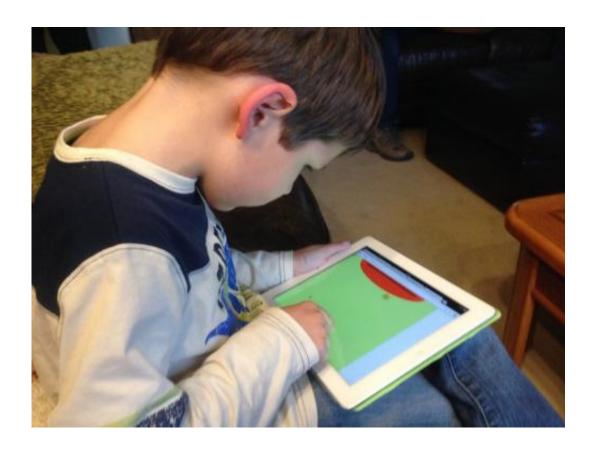# Researchers exploring how digital gaming could help prevent childhood obesity

February 17 2015, by Katie Jacobs

Gaius Aileo, 7 years old, beta tests the project's game on an iPad. Credit: Nathan Aileo

The children file into the Penn State nutrition lab before taking their seats and being handed a tablet. A research assistant helps them turn the devices on and power up a game they're asked to play while the researchers look on. The kids guide their characters through the digital

world—across platforms and into the air to collect items.

But it wasn't Mario or Luigi they guided to collect coins. Instead, the children helped their characters—and by extension, themselves—choose between healthy and unhealthy foods.

The researchers were observing how the kids interacted with the game as part of a larger study—one that is aiming to explore how digital games can teach children the skills they need to prevent childhood obesity.

The project—funded by Penn State's Clinical and Translational Science Institute—is helmed by Erika Poole, assistant professor in the College of Information Sciences and Technology (IST).

"We're curious to see if digital gaming can teach kids about making healthy choices when it comes to food," Poole said. "The game simulates the child going about his or her day making choices about food. For example, the player might have to make decisions about which foods are healthy or not."

Anyone who's spent time with children probably knows that the concept of consequences is usually lost on them. Kids don't usually grasp what gaining weight or developing diabetes in the future might mean for them—what they do know is they want a cookie, and they want a cookie now.

But childhood obesity is a real problem. According to the most recent statistics from the Centers for Disease Control and Prevention, more than one third of American children and adolescents are overweight or obese.

Observation rooms like this one were used to monitor the children as they interacted with the game. Credit: Penn State

"Many of the existing strategies we use to modify people's behavior, such as reminding them to eat more fruits and vegetables, aren't working," said Poole. "Games are a promising approach with kids, so we want to see if it's effective in teaching them healthy habits early."

Once Poole and her team decided on digital gaming as a strategy, the game needed to be built and tested before the actual study could begin. Poole enlisted the help of University research assistants and outside contractors to program the game, which is designed to teach kids such skills as differentiating between fruit and fruit-flavored products.

One of Poole's research assistants is Nathan Aileo, a computer

programmer in Penn State's Applied Research Laboratory and a doctoral candidate in the College of IST. In addition to work and his studies, he has a 7-year-old son named Gaius, who Aileo says is a testament to the appeal of technology to children. Gaius also helped in the project by beta testing the game on an iPad—trying it out before they brought in other kids.

"Gaius loves technology and gadgets and enjoys playing games on a tablet," said Aileo. "During the beta testing, he preferred a section of the game where you make a running child jump to get food items. Ideally, the objective is to skip the unhealthy food and grab the healthy items. He didn't always get that part, but some kids in the study did."

Once the team was confident that the game was ready, it was time to put it to the test. Poole reached out to Kathleen Keller, assistant professor of nutrition and food science and director of Penn State's Metabolic Kitchen and Children's Eating Behavior Laboratory, which offered the team a place for children to come in and try the game.

"We brought children into the lab and simply observed how they interacted with the game," Keller said. "We wanted to see what was child friendly and what they understood and what they didn't."

She adds that while the game is hopefully fun for children to play, it also provides a safe environment for kids to try new things.

"Making new decisions in the real world can be risky, but trying something out in a virtual environment is risk free," said Keller. "Plus, kids don't always understand long-term consequences in real life. But succeeding or losing in a video game is something immediate they can understand. Eventually, those lessons can extend into real life."

Poole says the next phase of the project will have children between the

ages of 7 and 11 play the game a couple times a week at home. Pre- and post-testing will be done to evaluate knowledge and changed behaviors. Poole says they want to see if the kids actually change the way they interact with food in addition to gaining new knowledge.

"The goal is to have children—and their parents, too—learn to make better food-based decisions on a day to day basis," says Poole.

Keller adds that at some point in the future, the team also hopes the game can be used on iPads in schools to extend the reach of the project. Perhaps after playing the game, kids will be reaching for that apple instead of an apple-flavored lollipop.

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