Using Interactive Technology to Teach Basic Algorithmic Instructions

Josue Mayorga, Yassin Moghazy and Shawna Cassagnol

Dr. Anca Mihu Doloc and Dr. Cindy Roberston

Interactive technology can be used to teach programming concepts to students more easily. Technology can seem hard to understand and scare off students with little understanding of it. The Technical Ambassador Program introduces some basic concepts through new and exciting technologies to show people that technology can be fun. The focus of the project is to teach students what an algorithm is and how it works while using interactive technology to pique their interest. The technology used is Cozmo: an advanced robot with an animated face and a voice that was created by Anki. It can move around, play, and interact with people. Cozmo's brain is in the Cozmo App, which can be downloaded to your phone or tablet through the App Store and Google Play Store. The students will be asked to write a program that navigates a Cozmo inside a maze, retrieves a block, and returns it to the user.

Students will be randomly assigned in groups and asked to write step-by-step instructions for making a sandwich. Groups of students should not be less than four or greater than six people, as this is the most effective size for learning (Ward). Algorithms can be easily explained by relating them to games students have already played, and therefore will be shown that they already understand the premise of algorithms. After completing this portion of the lesson, they will be given access to, and specialized instruction for, Cozmo’s programming software - Code Lab. When they are able to understand coding methods for this block-based programming software, they will be given access to the maze we provide and will have time to retrieve blocks from the maze using both the easy and intermediate versions of Code Lab.

Each maze will be set up differently and have their own challenges built in that the other mazes didn’t have. This will force students to have to approach each maze differently than before but with the same fundamental concepts in mind. The goal is to get people who weren’t interested in technology or have no idea how to approach it can use critical thinking skills to apply this to coding and realize that coding is just step by step instructions for a computer to process and execute.

Example of algorithm 

Before using the Cozmo students will be asked to take a survey asking if they are interested in the ITEC field and how hard do they think it is. After the students have completed all activities they will be asked to take another survey. The survey will ask them how difficult they found the activities from a scale of 1 to 10. They will also be asked how enjoyable it was to use the Cozmo, as well if it change their mind about the ITEC field and how interested they are in pursuing a career in it. The results of both surveys will then be used to determine if using Interactive technology can be used to teach programming concepts simpler and enjoyable.

Citations

Ward, Beatrice A. “Instructional Grouping in the Classroom.” *Instructional Grouping in the Classroom*, Education Northwest, 7 Aug. 2007, 1:03, educationnorthwest.org/sites/default/files/InstructionalGrouping.pdf.