Using Tangible Fruit to Teach Fundamental Java Concepts.

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| **Technolgy Ambassador Program: TAP**  Tap is a movement within the culture of technology at GGC that breaks down the stigmas surrounding technology. Tap, which stands for technology ambassador program, is a course at Georgia Gwinnett College that allows students to simulate real-world scenarios such as building projects, teamwork, leadership, and meeting project deadlines.  The goal of Tap is to encourage students with varying levels of computer knowledge to demonstrate to others that technology is not as brash as it appears.  **Study Target/Focus/Purpose:**  TAP provided us with the ideal platform to begin collaborating, being creative, and executing. We were able to build an interactive game to aid others in their programming education thanks to having this as our basis. Our project's target audience consisted of young adults with some knowledge of Boolean logic and conditionals.    We wanted to encourage everyone to try out technology in an approachable and enjoyable way that also helps to develop logical reasoning and gives technology building blocks.  **Workshops and Events**  Throughout the Spring 2023 semester the Fruit Rain Team attended several different events to promote TAP and show off Fruit Rain itself. Live demos of the game were played by GGC students and faculty at the TAP expo, to younger children at the Atlanta Science Festival, and an overview and explanation of the game at the SST Stars event and Create Symposium. Our team also hosted two workshops in freshman level ITEC classes where we taught them the very basics of Java and had some students test out our game.    **Figure 2: ATL Science Festival** | **Fruit Rain: The Game**  The goal of Fruit Rain was to create a fun and compelling educational game that quizzes players on the fundamentals with Java. This is performed by presenting the player with a question and having the answer choices “raining” down on the screen represented by fruit that the player physically has in front of them.  The player then must physically touch the fruit to select their answer for the question presented to them and depending on their selection the game will tell them if they got the question right. If they answer the question right, the game moves present the user with another question, if they answer it wrong.  **Figure 1: Demo of the gameplay**  **Results**  We held two workshops, before which we asked the students how much experience they had with programming, as well as how confident and enthusiastic they were towards the subject, all on a scale from 1 to 5. On these questions, we received average scores of 1.92, 1.97, and 3.39 respectively. After these workshops, we once again asked for students’ confidence and enthusiasm, as well as their rating for the workshop, engagement, and how much they believed they learned from the workshop.  On these questions, confidence increased to 2.94, enthusiasm stayed around the same at 3.41, we got an average rating of 3.85, 3.94 for engagement, and 3.56 on learning. Additionally, we asked students if our workshop made them more curious about IT, with about 44% saying it did, and about 38% saying maybe. We also asked if they would consider taking a programming class after completing our workshop, and out of those who weren’t already planning to take one, 54% said they would. |
| **Figure 3: Workshop Results** | **Discussion and Conclusion**  Everyone who had the opportunity to interact with our project greatly enjoyed its novelty. The kids at the Atlanta Science Festival had a difficult time understanding our programming questions, so we made the decision to change them into simple math problems with addition and subtraction. This was easy to do because of our decision to store questions in CSV files rather than hard code them into the game.  We believe that this design choice is one of our game’s greatest strengths, as we also used this to our advantage when planning our workshops. This project was a wonderful opportunity to develop not only our programming capabilities, but also our team building, leadership, and communication skills, which will be instrumental moving forward in our careers. |