# Introducing Programming Concepts through an Interactive Scratch Workshop

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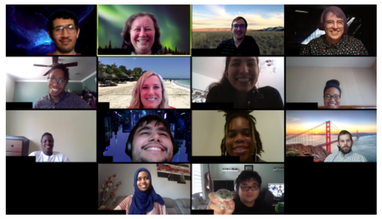


## DESCRIPTION OF TAP PROGRAM

The Technology Ambassadors Program (TAP) is an interactive class focused on service learning. TAP provides the opportunity to build a project using different technologies and present it in various events. Due to the COVID-19 outbreak, we conducted the project virtually, utilizing online communication platforms for our interactive workshop presentations and data collection.

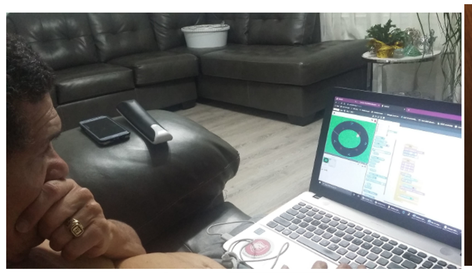
## GOALS

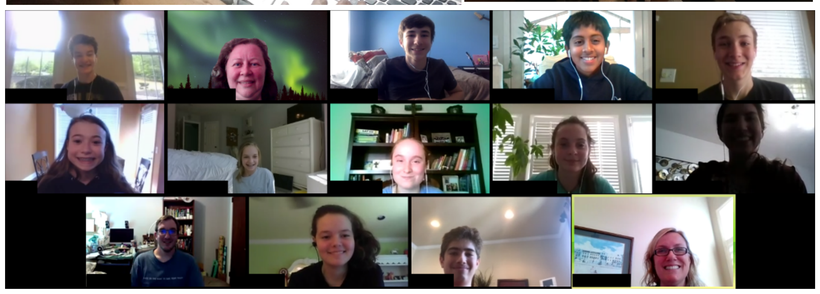
- Introduce our audience to procedural programming using the Scratch programming language
- Facilitate a workshop and teach participants to develop their own simple racing game
- Teach how certain fundamental algorithms are utilized to create the logic behind a game
- Encourage participants to pursue a career in STEM

## PROJECT DESCRIPTION

Students use the Scratch programming language to develop an interactive racing game during a guided workshop. They are introduced to 'if-else' statements and 'while' loops during game development and develop an understanding of how they have a direct impact on the game's functionality.

The project originally utilized a hand-tracking motion controller to control the direction, however this was removed in order to facilitate the workshop remotely during the COVID-19 pandemic.





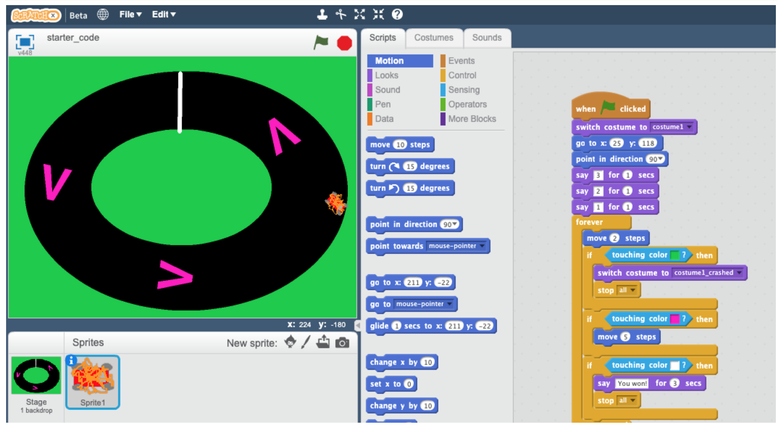
## REFERENCES

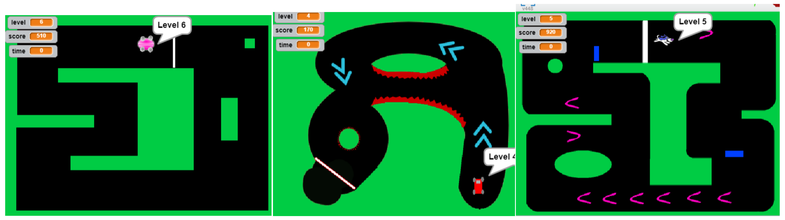
Scratch - https://scratch.mit.edu/

ScratchX- http://scratchx.org/

Scratch Leap Motion Extension- http://khanning.github.io/scratch-leapmotion-extension/

## WORKSHOP DESCRIPTION



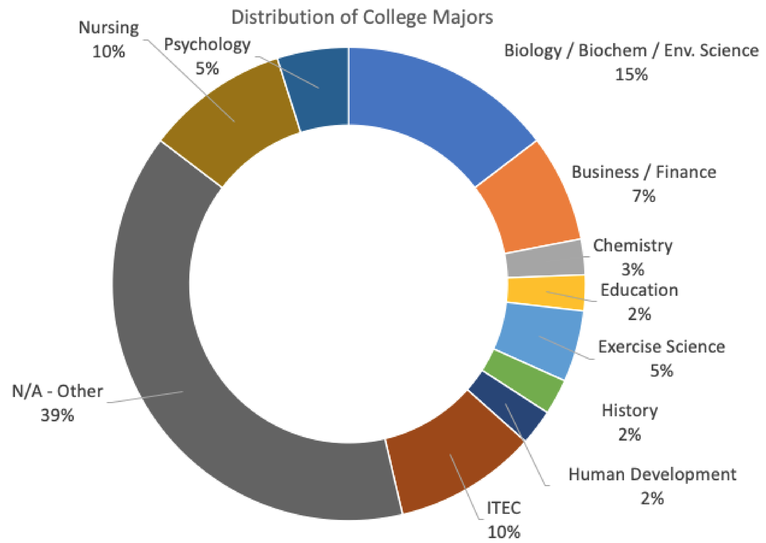

The racing game featured seven different levels of increasing difficulty. The player's score was tracked and students were encouraged to challenge each other.

## RESULTS

We delivered our project to Intro to Computing, Digital Media, and middle school students using BB Collaborate and Zoom to adapt to the COVID-19 pandemic. Students created an interactive racing game while learning 'if-else' statements and 'while' loops.

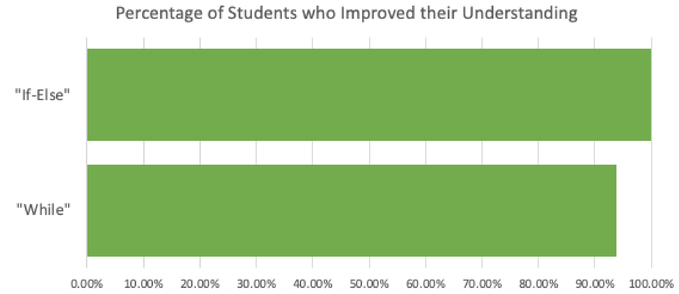
Data was collected before and after the workshops via online surveys.

- **90% of the workshop participants were not ITEC majors**



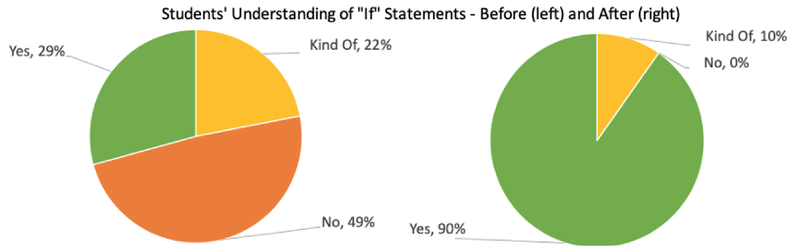

## RESULTS

- **100%** and **93.75%** of participants with limited or no prior knowledge improved their understanding of 'if-else' statements and 'while' loops, respectively




- **Out of the 41 participants, 12 had prior knowledge of "If" statements and 9 had prior knowledge of "While" loops.**

Participants were asked about their understanding of "If" statements and "While" loops before and after the workshop. In both cases, participants' understanding of these concepts improved dramatically.




The participants' ages ranged from 12 to 63. 27 participants, or 65.85%, were current college students between the ages of 18 and 34. 10 participants, or 24.39% of respondents surveyed were middle school students.