Introduction to Programming Techniques Using a Simplified Interactive Game Development Experience

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ABSTRACT

Purpose: The objective of this project is to foster genuine interest in technology and computing in students. Using a simple space-themed game, we aim to teach students the fundamental programming concepts like variables, if-else statements, and loops, and how to logically develop an algorithm.

HYPOTHESIS

Introducing block-based programming through a fun and interactive medium like Makey Makey is an effective method to help students with no prior coding experience develop critical thinking and problem-solving skills.

TECHNOLOGY

1. Scratch: A block-based programming language created by the MIT Lab.

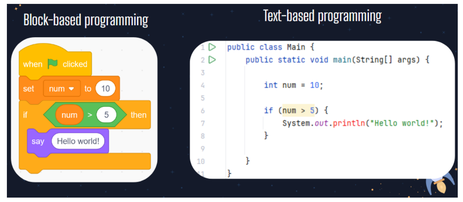

Figure 1.1: Difference between block-based and text-based programming language.

2. Makey-Makey: An invention that creates a controller using conductive materials to complete a simple circuit.

Figure 1.2: A Makey-Makey.

WORKSHOPS

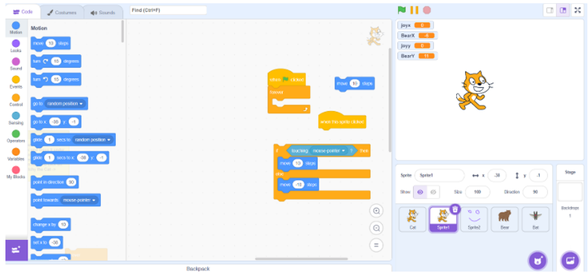

Figure 2.1: Scratch workspace.

The workshop comprises of two sections:

1. Lessons on character movement and sprite animation in Scratch where they learn the fundamentals of programming.
2. Hands-on debugging and answering simple programming questions to open up the game code and proceed through the game.

Figure 2.2: The first room of the game.

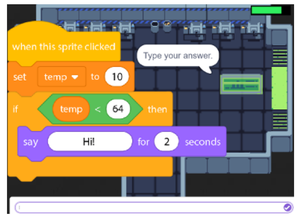

Figure 2.3: A question inside the game.

Figure 2.4: Play-Doh as arrow keys.

RESULTS

- Students were able to follow along with the lesson.
- Some went above and beyond and add more features to the sprites.
- Students enjoyed seeing their own work in action.
- Students loved animating their own sprite

CONCLUSION

The method of using a hands-on, interactive platform to explain programming concepts is effective. Despite having little to no coding experience, the students in introductory ITEC courses were able to complete the in-game programming questions about concepts that they only earned a few minutes earlier with ease.

ACKNOWLEDGMENTS

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REFERENCES

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