



LEARNING MODULES

GK-12 DISSECT at New Mexico State University

Title: Button Lab Transferred to Scratch

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Discipline or Area: Dichotomous Key

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School: Centennial High School

Subject of class: Zoology

Grade: 10th, 11th, and 12th

COVERAGE OF COMPUTATIONAL TOPICS

Topics covered were dichotomous key and programming in Scratch. The CT concepts covered were algorithm, branching, iteration, correctness, and efficiency.

OBJECTIVES

Students will learn to how to take a lab they have done in class and program it in Scratch.

EQUIPMENT AND MATERIALS

Student Button Labs that have been completed on paper, laptops or computers for the students to log onto Scratch (scratch.mit.edu), students grouped in pairs, a class account or an account for each student on scratch.mit.edu, a template to show the students how to start working on their application, a template for each pair of students to start their applications with.

BACKGROUND AND REFERENCES

The purpose of this module is to allow students to taking a lab they have worked on previously on paper and to convert it to a computer application. Since they will be familiar with the button lab already, the students should only be concerned with how to program in Scratch.

Information about the Button Lab was supplied by the teacher.

PROCEDURE

Provide detailed instructions on how this module is taught.

Introduce students to the Scratch interface. Go over some of the blocks and explain what they do. Then, show the students the Button Lab Template (file “Button Lab Template.sb2”). Show that something happens when you click either “Four” or “Two” sprites. Specifically, show that when button “Four” is clicked, all of the sprites will disappear and the sprite Amon will appear. When the button “Two” is clicked, all the sprites will disappear and the sprite Cassidy will appear.

Assign a template to each pair of students. At this point, you can either have the students explore their template and try to program on their own or you can demonstrate how to add a new question and answer sprites and how to program the sprites to do something when clicked. There is also a full tutorial (file “ScratchButtonLabHelp.docx”) that the students can use alongside making their programs.

What were the “learning goals?”

The learning goals were to introduce students to programming in Scratch. Another learning goal was for students to learn to problem solve and figure out how to transfer their Button Lab from paper to Scratch.

How did you introduce CT?

We introduced CT by allowing the students to freely explore what blocks do and decide what blocks they should be using.

How could you assess the understanding of CT in this module?

We assessed the understanding of CT in this module by continuously checking that the students were thinking on their own about how to build the application. We also checked to see if they remembered what the terms algorithm, branching, iteration, correctness, and efficiency meant and if they could identify those terms in their applications.

NOTES AND OBSERVATIONS

What were challenges you encountered in the overall development of the module?

The challenge encountered in the overall development of the module was deciding on how much of how to program the Button Lab without giving them exactly every single step. I wanted them to try and figure out how to make sprites show the next question and answers when an answer button is clicked. Each week that the students worked on their programs, however, they seemed to forget more and more on how to create the program. In the end, I wrote a tutorial on how to make the application from start to finish so that the students could finish their programs.

What was successful?

What was successful was that when I would help the students with how to program, they would begin to understand the pattern and would need less of my help until the next week.

How was the students' reception to the content of the module?

Students responded pretty well by attempting the module and all students produced some applications even if they were not completed.