Microsoft Imagine

Lesson Plan 2 – Guided Investigation

Topic Description

During this second lesson, students will be introduced to coding and game development with a focus on character action and introductory programming concepts. Students will examine the game action sequences, will learn more about the character menus in the Kodu environment, and the When...Do... logic of Kodu programs.

Objectives

Students will be able to:

- Navigate the menus associated with characters
- Describe the When...Do... game action
- Model the When...Do... in an unplugged activity
- Follow a tutorial to create When...Do... constructs
- Communicate ideas for modifying game characters and actions
- Revise the action of the characters in the Flashy Fishbot game

Materials and Preparation Required

- Access to the Internet and Kodu Game Lab: http://www.kodugamelab.com
- Computing device with screen display for teacher
- Computing devices with keyboards for students
- Flashy Fishbots (completed working game): http://aka.ms/flashyfishbots
- Fishbot Tutorial: http://aka.ms/fishbotstutorial
- Student Guide: **Student_Guide_Kodu_Makerspace.docx**
- PowerPoint Presentation to deliver the lesson: **2_Slides_Kodu_Makerspace.pptx**
- Dry run the PowerPoint Presentation in Slide Show mode to enable animations and be familiar with any on-click animations
- Headphones for students (recommended)

Outline of the Lesson

- Warm up review of Flashy Fishbots
- The When...Do... Programming Construct
- Unplugged Activity: When...Do... Can Do
- Fishbots Tutorial
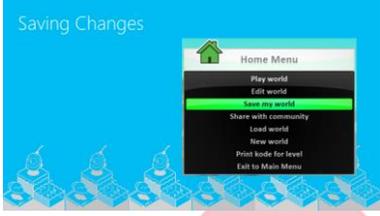- Flashy Fish Revisions
- Wrap up

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Student Activities

- Experience and program the When…Do… programming construct
- Follow a Kodu Tutorial to create a simple game
- Brainstorm how actions in the Flashy Fishbots game could be modified

Teaching/Learning Strategies

Strategy	PPT Image
Warm up review of Flashy Fishbots (5 min) Introduce the second lesson *Guided Investigation* by sharing the Big Questions. Display slide 2 for questions. Students should expect to explore the answers to these questions during the second lesson: • What is the When…Do… game action? • How can you modify game characters and action? As a way to get students thinking about the actions of game characters, engage them in a discussion of what they saw in the Flashy Fishbots game. • How did the Kodu character act in the game? • What made the fish act in certain ways? • Did the fish react differently in different situations?	Slide 1 Slide 2
The When…Do… Programming Construct (5 min) Introduce the When…Do… programming construct. Display slide 3 for more information. Discuss the When…Do… programing construct with examples shown in the slides. In Kodu, programmers line up colorful icons to tell objects and characters how to behave. It's cool because you're programming the behavior of an object. Direct students to the example on the slide. Let's say you want **anything** that Kodu **bumps** to get **bigger**. You pick icons from the navigation menu then line them up to form	Slide 3 Slide 4

Strategy	PPT Image
a kind of visual sentence. The sentence would say "When Kodu bumps into anything, it gets bigger." In Kodu we say it in the When...Do... programming construct. The sentence would say "When anything bumped...Do bigger." Display slides 4-6 for questions. Use slide 4-6 with the fill-in-the-blanks to reinforce the When...Do... construct in the Flashy Fishbots game: • What happened when you clicked the mouse? *Answer: Do... shoot paint balls* • What happened when the fish got hit? *Answer: Do... change color* • What happened when the fish collide? *Answer: Do... change direction*	Slide 5 When...Do... Programming construct: Question 2 What happened when the fish got hit? Answer: Do... change color Slide 6 When...Do... Programming construct: Question 3 What happened when the fish collide? Answer: Do... change directions
Unplugged Activity: When...Do... Can Do (5 min) Play the When...Do... Can Do unplugged game with students. Display slide 7 for directions. On the screen students see three When...Do... actions. When you call out the When... and their task is to act out the Do... Practice the game with these prompts: • When... I say "rock", Do... "clap your hands" • When... I say "Kodu", Do... "wave your arms in the air" • When... I say "Star", Do... "say the word Awesome" Play the game with these prompts: • Say the words "rock", "Kodu" and "Start" in random order to cause reactions from the students • Increase the tempo as students catch on Conclude with these questions: • How many of you found this activity easy? • How many of you found it challenging?	Slide 7 When...Do... Can Do • When... I say "rock", Do... "clap your hands" • When... I say "Kodu", Do... "wave your arms in the air" • When... I say "Star", Do... "say the word Awesome"

Strategy	PPT Image
Let's face it. It's hard to think and do at the same time. Do you think your computer would find it difficult? Do you think your computer would have made any mistakes?	
Fishbots Tutorial (20 min) Distinguish the differences between Kodu tutorials and finished games. Display slide 8 for definitions. • Tutorials are designed to teach something about programming Kodu. Tutorials give you steps but it's possible to make a mistake. • The Undo button will reverse simple errors. But it is easier to start the tutorial over if the program become terribly messed up or the students becomes frustrated. • Start over by closing the tutorial and selecting Load World from the main menu again. Tell students that they are just beginning on an exciting project in which they will be working with others to create a game…just like real game designers do. Organize teams of two to work on one computing device. Instruct students that they will take turns in two important roles. One partner as the Map Reader and the other partner as the Driver. Display slide 9. Explain the **Map Reader** and **Driver** roles • The **Map Reader** is the partner who reads the instructions on the screen • The **Driver** is the partner who writes the code described in the instructions Demonstrate, with the help of a "helper student," how to follow a tutorial.	Slide 8 Slide 9

Strategy	PPT Image
• Point out where the directions are located and stress that reading and understanding the directions are critical to creating a successful game • Read aloud the first direction • Have a helper student be the Map Reader to complete the step on the teacher's display • Read aloud the second direction • Have a helper student be the Map Reader to complete the second step on the teacher's display Tell students that after a few minutes they will change roles so that each team member gets several chances at each role. • Ask student teams to decide who will be the first Map Reader and who will be the first Driver • Monitor students as they work on the Fishbot Tutorial • Tell them to switch roles after each 2 minutes **Note**: One of the goals of the Kodu Makerspace is for students to collaboratively design, plan, and create a Kodu game. Even if there are enough computers for every student to work alone, this pair programming strategy is highly recommended so that students develop the skills and attitudes of working together.	
Flashy Fish Revisions (10 min) Guide students to add a new line of code. Display slide 10. • Direct students to page 8 in Student Guide • Read the Add a New Line Directions and Activity checklist Demo these steps: • Toggle to Flashy Fishbots and pace through the directions as students follow along, stopping at each step to make sure the students are on pace with you. • Add line 4 (page 8 in Student Guide) to make Kodu speak when he hits any bot.	Slide 10 Revise Flashy Fishbots action Slide 11 Saving Changes

Strategy	PPT Image
• Add line 5 (page 8 in Student Guide) to make any red bot disappear when hit. Encourage students to experiment with additional When…Do… line as time permits. Guide students to save their game. Display slide 11. Save the game with the name selected by the team. Display slide 12. Demonstrate these steps, as needed. • Click Home button • Click Save my world • Add 1 to the version number • Change the game name as desired • Add your initials to the name • Revise the Description, as desired • Click Save	Slide 12
Wrap up (5 min) Refer to slide 13 to summarize students' experiences with the tutorial. Select from these questions as time permits: • What did you learn about working with Kodu Game Lab? • What did you like about the Flashy Fishbots? • What did you like about the When…Do… action plan? • How would you like to change the characters in Flashy Fishbots? • How would you like to change the action in Flashy Fishbots? • What else can you do to keep building your skills in these areas? Review Big Questions.	Slide 13 Slide 14

Extensions

Instruct students to explore some of the other games in the Kodu "Load World" menu selections and to search for When...Do... constructs that they can add to their games.

Tips

The distinction between a Kodu game and a Kodu tutorial is an important concept. Kodu tutorials provide text instructions to the user at the top of the screen. The program does not check the correctness of the code students enter. Incorrect code can be entered and if so many errors have been introduced to make it difficult to debug, the best strategy is to start the tutorial over by re-opening from the Load world menu. The Flashy Fishbots game, is a finished, ready-to-play program. The Fishbot Tutorial is a guided practice experience that instructs students in creating the Flashy Fishbots game.