Kathryn Zuroski

Grade Level(s)/Subject(s) Taught: 9th and 10th/Math/Science

Objectives: How does the slope and y-intercept affect the graph of a line?
                Using Project Interactivate, what conclusions can you draw about slope, y-intercept and the equation of a line?

Mathematical Concept/Key Ideas:
Students use the key ideas of patterns and functions and modeling/multiple representation. Students construct generalizations that describe patterns simply and efficiently through patterns and functions. They also use mathematical modeling / multiple representation to provide a means of presenting, interpreting, communicating and connecting mathematical information and relationships.

    This lesson will begin with a 10 minute Do Now activity that will review material covered the prior day. I will then introduce this lesson using the website for Project Interactivate. This class will have to take place within a computer lab, therefore every student will have access to an individual computer. The prior knowledge that students should have for this lesson would be graphing lines and associated vocabulary. For those students in the 8th grade this material would be covered in the *Moving Straight Ahead* textbook, and this activity would be effective as a culminating activity.
    For the opening of the lesson I would review recent vocabulary and concepts that students have been covering. This would activate prior knowledge. I would post the essential questions on the board and refer to these at the beginning of the lesson so that students' exploration for the class period could be guided. After having activated prior knowledge and having prepared the students for the day's objectives I would then go over my expectations for the class period. Students would be directed to the webpage for Project Interactivate (www.shodor.org/interavtivate). Students would be directed to click on the icon for Activities and to scroll down to the activity called Data Flyer. By directing students to this website I would be able to provide a short demonstration of the basics of using Project Interactivate to model how slope and y-intercept affects the graph of a line. At this point I would be sure to monitor students to make sure we were all at the same place and students were on task. Students would be asked to click on Show Grid on the right side. I would go over how to put an equation in the space for a function. I would have a lot of silent reminders on the board at the time (for example: $f(x) =$ is the same as $y=$, on the website). Together we would put an equation in, such as $-2*x + 3$. I would remind students to put the multiplication sign between the coefficient and the x variable. Once all of the students were following that, I would talk about what the sliders were and how to manipulate them.
    After most students are comfortable with manipulating the website, I would start the work time of the lesson where they are using this activity to answer the objective questions and draw conclusions. At this point I would have time to help any students that may have struggled with finding the website, entering the equation, manipulating the

slider, etc. I would remind students to experiment with the website and plot points by inputting them under Data. See attached screen capture. I would be looking for the students to be on task with an activity. I would also be looking for the students to be drawing conclusions or maybe taking some notes on what they found. My role during the work time would be to facilitate the students' work and discoveries. I would be making sure that they are on task and working on the specified website.

For students that finished before the class period was over, I would give them the option to explore the following other activities from the web site that are also relevant to the content:

> Maze Game
> Graph Sketcher
> General Coordinates Game

To close the lesson, I would bring the class together and begin to ask the essential questions. Students would share their conclusions and I would put them on the board with poster paper. I would make some generalizations and ask the students to agree or disagree and back it up with what they found. They would be required to back up a conclusion they make with evidence from their exploration.

Rubric: The student's class work grade will be determined based on the following rubric. The students will be aware of this rubric, and it will be posted for them to refer to.

5: Student was on task 85 – 100 % of the time. Student worked productively with Project Interactivate to come up with three or more correct conclusions.

4: Student was on task 70 – 85 % of the time. Student worked productively with Project Interactivate to come up with two correct conclusions.

3: Student was on task about 50 – 70 % of the time. Student worked with Project Interactivate to come up with conclusions and at least one of them is correct.

2: Student was on task less than half of the time. Student worked with Project Interactivate to come up with conclusions that are not complete.

1: Student was not on task for any significant amount of time. Student worked with Project Interactivate but did not come to any conclusions.

0: The student refused to participate in the activity or did not complete the activity.

This is an example of the screen that students will be working off of in this lesson.