Digital Citizenship Lesson Plan

Cartesian Plane

General Topic (as defined in the Digital Literacy Framework)	TD2
Technology Operations and Concepts d) Seamless Use Demonstrating Self-Efficacy	
Applicable Grade Range	
6-9	
Outcome(s) to be Addressed	
The student uses different ICT in a way that helps to achieve certain results more quickly, or more easily, or to achieve better results.	
Importance / Significance of Lesson	
Students need to be able to use mobile technology to access and gather information in order to solve a problem or complete a task they encounter. This lesson will require them to work in a group and use iPads or other mobile devices to gather information in order to help them to find their way through a problem with gradual supports along the way.	
Duration	
30 minutes	
Overview	
Students will be posed with a complex question regarding the Cartesian Plane (grade 6 outcome) and a small amount of support and required to work to find a solution to the problem. Scaffolding will be provided in the form of hints to help students along their path to finding the solution.	
Required Resources	
Class set of iPads/iPods Seating plan that puts students into groups of 4	

Lesson Plan and Extension Activities

Introduction to the Cartesian Plane

Seat students in groups of four facing each other and provide each group with an iPad and 4 sticky notes with the numbers 1, 2, 3 and 4 on them. With little background given, pose this question to them: "Determine where you are seated according to the Cartesian Plane and label your desks accordingly." Allow the students to work together using the iPad and try to understand and answer the problem. Have them use the sticky notes to label their desks and then record their answer on a sheet of paper. At this point students should have searched Cartesian Plane.

Provide students with the first hint.

Hint 1: The Cartesian plane is a coordinate system that you are actually familiar with. Every time you make a bar graph or broken-line graph you have been working with coordinates in one quadrant of the Cartesian Plane.

The teacher can draw a Cartesian Plane on the board and highlight the first quadrant where students have experience graphing coordinates. Then ask the students to reassess their answers based on the new information, change their answer if necessary and record their responses on the same sheet of paper as before.

Hint 2: Define Quadrant as one quarter of something, in this case, one part of the Cartesian Plane.

The teacher can identify the four parts of the Cartesian Plane to help in the definition of quadrant. Students can continue their research and try to figure out an answer to the question. Again, the teacher can ask students to reassess their answers based on the new information, change their answers if they want and record their new responses on the same sheet of paper.

Hint 3: Identify where the front of the class is according to the desks.

This is where most changes will occur.

Where naturally one might label something as 1   2

                                                    3   4

Or 1   2

      4   3

Or even   4   1

             3   2

The Cartesian plane is actually labelled   2   1

                                                    3   4

If the front of the class is located above that the desks should be labelled as above in order to solve the question properly.

In completing this lesson with gradual scaffolding, the students begin to understand the order of the Cartesian Plane, define quadrant and broaden their understanding of graphing based on their experience using the first quadrant when creating bar graphs and similar type graphs.

Have students watch the Khan Academy video at https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-geometry-topic/cc-6th-coordinate-plane/v/graphing-points-and-naming-quadrants-exercise

Then, have students work with their groups to use the information that they have just learned about quadrants and the Cartesian Plane to complete activities located at https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-geometry-topic/cc-6th-coordinate-plane/e/graphing_points_2

Adaptations

Younger students – simpler tasks, problems or activities.

Older students – more complex tasks or dynamic, multi-layered problems could be presented.

Additional Resources
www.google.com
www.wikipedia.com
www.khanacademy.org
Cross-curricular Outcomes Also Addressed
Social Studies – research skills, conceptualizing a problem or task

~developed by Kristin Sward, 2014