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Human Impact on Environment Using GIS

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The College at Brockport

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Name: Robert Arrendell

Grade level(s)/Subject taught: 9-10 Living Environment

Objectives: Students will be able to plot specific data points regarding a human impact on the environment problem of their choice in a given geographical area near the school campus using the ArcGIS program.

2.2a Development of a research plan involves researching background information and understanding the major concepts in the area being investigated. Recommendations for methodologies, use of technologies, proper equipment, and safety precautions should also be included.

2.3a Hypotheses are predictions based upon both research and observation.

2.3b Hypotheses are widely used in science for determining what data to collect and as a guide for interpreting the data.

2.3c Development of a research plan for testing a hypothesis requires planning to avoid bias (e.g., repeated trials, large sample size, and objective data-collection techniques).

P.I. 3.1 Use various methods of representing and organizing observations (e.g., diagrams, tables, charts, graphs, equations, matrices) and insightfully interpret the organized data.

Major Understandings

3.1a Interpretation of data leads to development of additional hypotheses, the formulation of generalizations, or explanations of natural phenomena.

Materials:

Computer

LCD projector or Smart Board

Notebook

Pen/pencil

ArcGIS program

GPS tools

Camera

- Using the Arc GIS program, my students will be able to survey an area around our school campus and plot points from areas that will give them specific data. The data will be regarding an environmental problem that the students need to come up with.
- To start, the students will be given some key notes regarding human impact on the environment. Students will be given a short open note quiz to see how they are doing with the topic. Students will be encouraged to think of ways, in their life, that they have impacted the environment positively and negatively. A session on using Google Earth will also be given.
- I will then explain the challenge project that they will be doing. This explanation will involve the training on the GIS program, the hand-held devices, and map work of the given area of research. Students will choose a problem to collect data points and information about. Next we will go for half of a day and the students will collect geographical points and data about each point. For example, one group might want to count the amount of trash items that are not disposed of correctly in given areas, in order to find out where littering occurs the most and least. Students will also take pictures of the areas that they plotted. After this is done, the data points will be entered into the Arc GIS program.
- Students will then report on their findings and challenged to raise different questions regarding the specific project. Projects need to be interactive, using Power Point and ArcGis, as well as clear and well presented.
- A rubric will be used to asses their group research and use of the ArcGIS program and tools. An exam will be given to the students that will cover general content as well as specific findings and conclusions found in their research.

Charlotte High School

Group Work

Name: _____

Teacher: Arrendell

Date: _____

Title of Work: Arc GIS project

Skills	Criteria	Points
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	1	2	3	4	
Helping The teacher observed the students offering assistance to each other.	<i>None of the Time</i>	<i>Some of the Time</i>	<i>Most of the Time</i>	<i>All of the Time</i>	—
Listening The teacher observed students working from each other's ideas.	<i>None of the Time</i>	<i>Some of the Time</i>	<i>Most of the Time</i>	<i>All of the Time</i>	—
Participating: The teacher observed each student contributing to the project.	<i>None of the Time</i>	<i>Some of the Time</i>	<i>Most of the Time</i>	<i>All of the Time</i>	—
Persuading: The teacher observed the students exchanging, defending, and rethinking ideas.	<i>None of the Time</i>	<i>Some of the Time</i>	<i>Most of the Time</i>	<i>All of the Time</i>	—
Questioning: The teacher observed the students interacting, discussing, and posing questions to all members of the team.	<i>None of the Time</i>	<i>Some of the Time</i>	<i>Most of the Time</i>	<i>All of the Time</i>	—
Respecting: The teacher observed the students encouraging and supporting the ideas and efforts of others.	<i>None of the Time</i>	<i>Some of the Time</i>	<i>Most of the Time</i>	<i>All of the Time</i>	—
Sharing: The teacher observed the students offering ideas and reporting their findings to each other.	<i>None of the Time</i>	<i>Some of the Time</i>	<i>Most of the Time</i>	<i>All of the Time</i>	—
Total Points					—

Teacher Comments:



