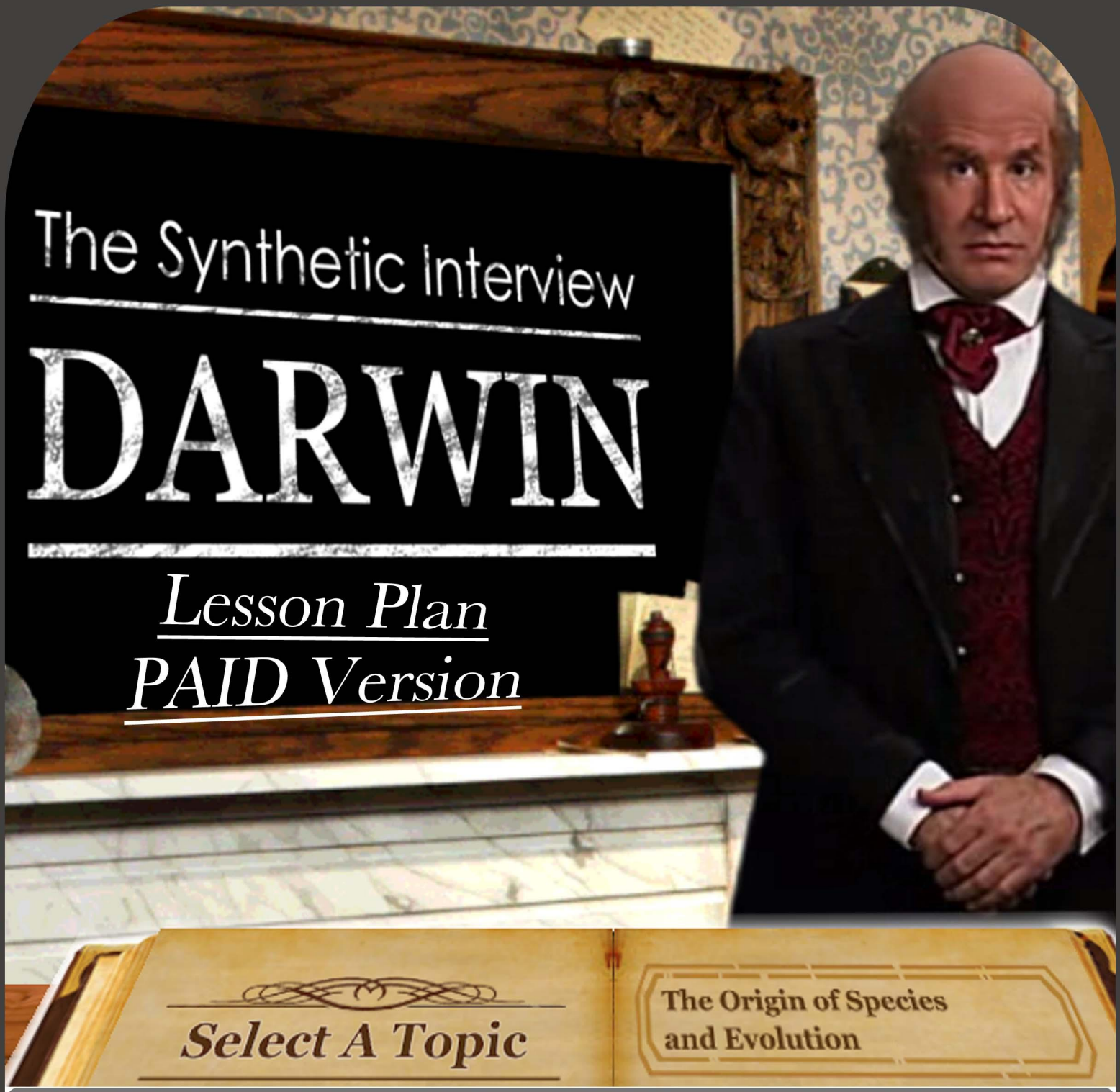

DUQUESNE UNIVERSITY

NIH National Institutes of Health

SEPA SCIENCE EDUCATION PARTNERSHIP AWARD
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The Partnership in Education

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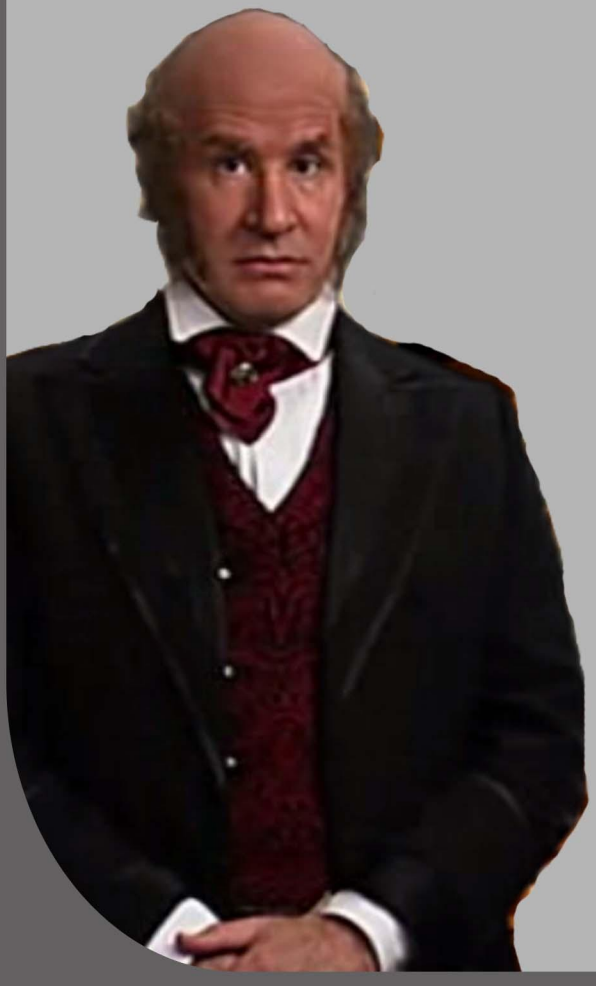
Charles Darwin Interview
Lesson Plan



Time: 45 minutes

Overview

The Synthetic Interview: Darwin app which can be purchased on either the Google Play Store or the Apple App Store has a wider selection of topics compared to the Lite version (free version). While questions about Darwin himself are found in this app, there are also more topics about the application of the theory of evolution, the critiques about the theory, and the effects of modernization on the theory.

This lesson will allow students to critically explore the issues surrounding the theory of evolution. Students will use the app to collect information on the various critiques about the theory, then apply this knowledge to participate in a debate to convince their classmates about their stand on the issue.

Standards

AAAS standards

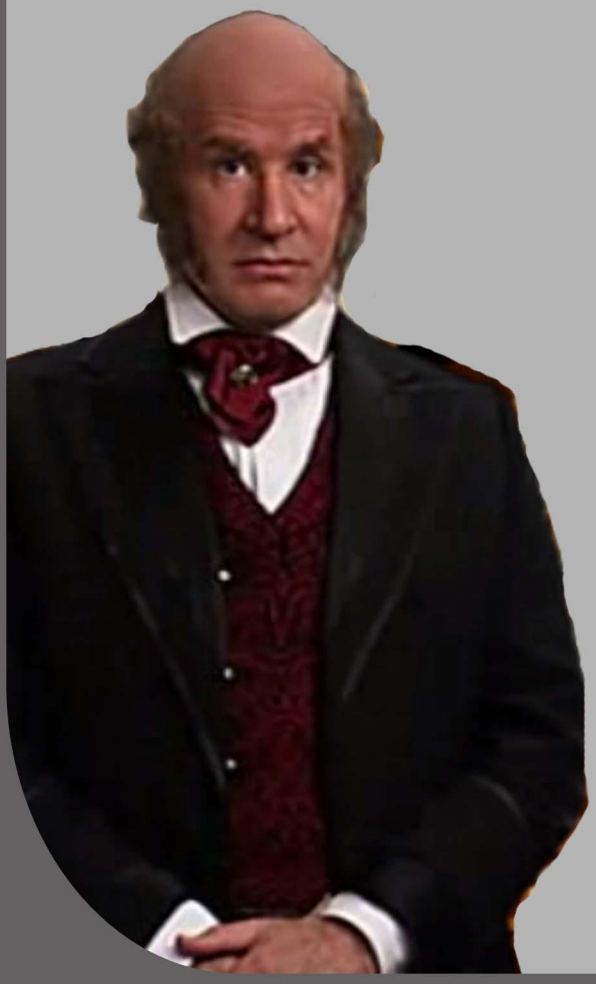
By the end of grade eight, students should know that;

-Scientific investigations usually involve the collection of relevant data, the use of logical reasoning, and the application of imagination in devising hypotheses and explanations to make sense of the collected data. 1B/M1b*

-Collaboration among investigators can often lead to research designs that are able to deal with situations where it is not possible to control all of the variables. 1B/M2c*

-What people expect to observe often affects what they actually do observe. Strong beliefs about what should happen in particular circumstances can prevent them from detecting other results. 1B/M3ab

-Darwin published his theory in the mid-1800s in Origin of Species. Its dramatic effect on biology can be traced to his use of clear and understandable argument, the inclusion of a massive array of evidence to support the argument, comparison of natural selection to the selective breeding of animals in wide use at the time, and the utility of the theory as a unifying framework for guiding future research. 10H/H4*



Charles Darwin Interview
Lesson Plan: Paid Version

NGSS Standards

-Scientific knowledge can describe the consequences of actions but does not necessarily prescribe the decisions that society takes. (MS-LS4-5)

-Phenomena may have more than one cause, and some cause and effect relationships in systems can only be described using probability. (MS-LS4-4),(MS-LS4-5),(MS-LS4-6)

Objectives

- Students will be able to research information about Charles Darwin; his life, his discoveries, and the critical views about the theory of evolution using the app *The Synthetic Interview: Darwin*.
- Students will be able to apply the information gathered from the app to debate various topics about the theory of evolution.
- Students will be able to organize the information gathered from the app to prepare an argument for the debate.

Materials

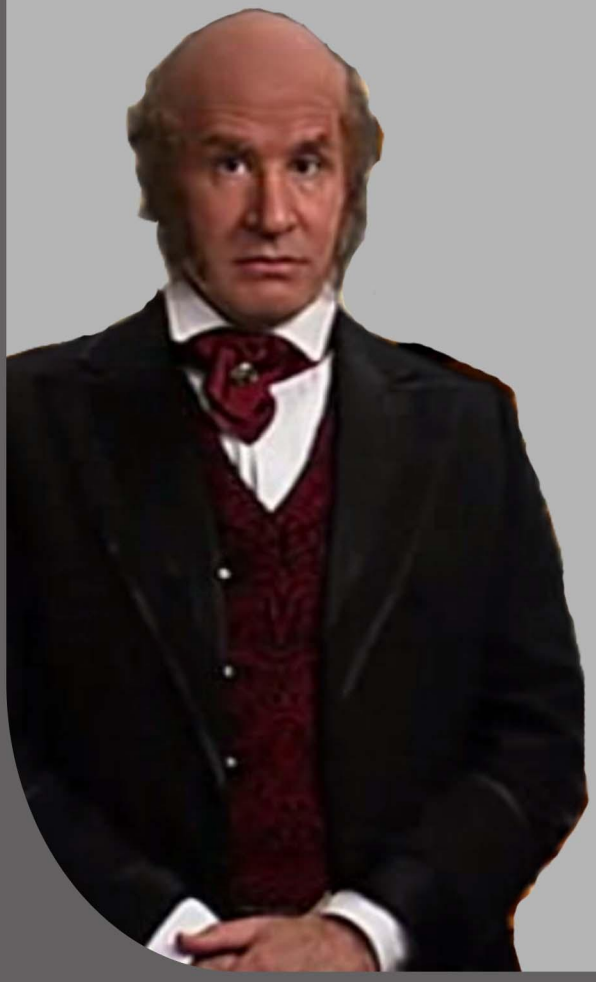
iPad or tablet for each student with the app Charles Darwin Interview previously installed. The app can be downloaded from the Google Play store or the Apple App Store.

Click the links below for a photo tutorial on how to download the app.

CLICK HERE to view the Android App Download Tutorial

CLICK HERE to view the iTunes App Download Tutorial

Charles Darwin Interview
Lesson Plan: Paid Version



Set Up

- For this lesson each student will need either an iPad or a tablet device. Pre-plan the method of providing the students with these devices. For example, reminding them to bring their device to class during the previous lesson or checking out the devices from the school library.

- Print copies of handout 1; Conflicting Views About Evolution for each student.

- Arrange the classroom to facilitate group work. That is; arrange three or four tables to promote face to face discussions.

- Display a picture of Charles Darwin and the following quote.

  "One general law, leading to the advancement of all organic beings, namely, multiply, vary, let the strongest live and the weakest die."

  "Who am I and what am I famous for?"

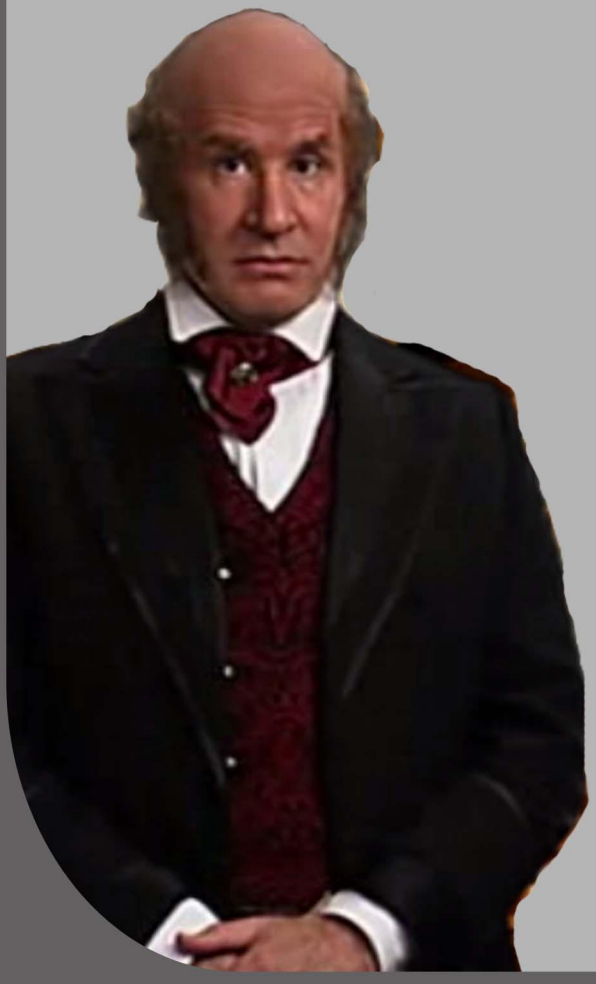
- Prepare a Google Form for this lesson by following the steps below;
  - Open up the Google Forms website (please note: you will need to sign into a gmail account to create a google form)
  - Click on New Form.
  - Add a suitable title for the form and add the following question. Be sure to choose the option to allow students to type in their answers.
    1) Please write two sentences about me or the theory I discovered.

Pre-Activity - 5 minutes

1. As the students enter the classroom direct their attention to the displayed picture, quote, and questions.
2. Ask the students to pair up and discuss the answer to the question. Then ask them to open up the Google Form and submit their answers as a group.
3. Display the responses from the Google Form so that all the students will be able to see it.

Charles Darwin Interview
Lesson Plan: Paid Version

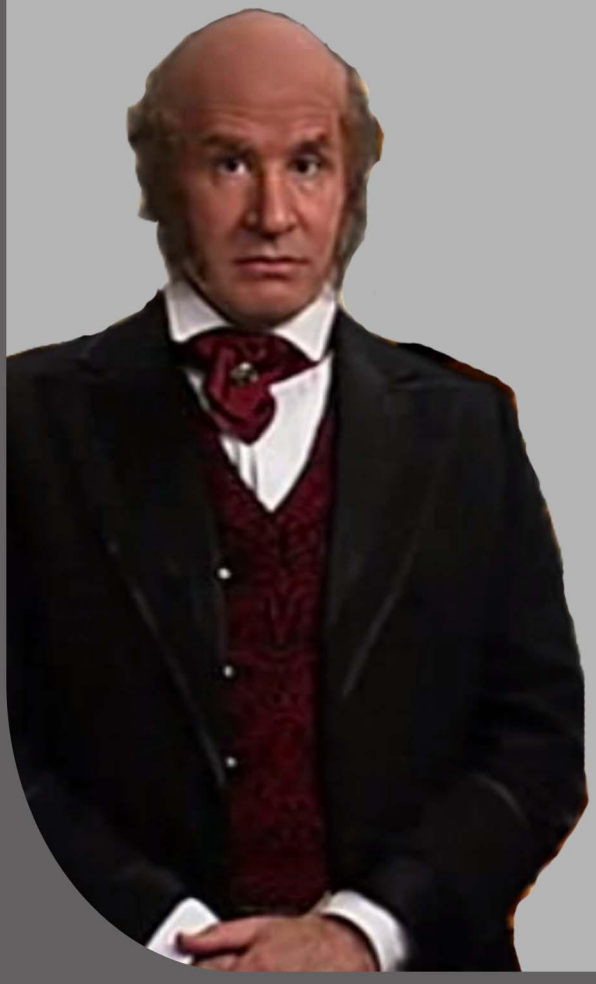
4. When all the groups have submitted their answers, hold a class discussion. Have each pair of students give reasons for their sentences. Use the student answers to discuss about Charles Darwin and the Theory of Evolution. The discussion should be directed towards the following ideas;
   - Darwin developed the Theory of Evolution using evidence gathered during his journeys around the world.
   - Natural selection is the main driving force of evolution. Variations in different generations of organisms allow for the organisms with advantageous variations to survive, while the other organisms will eventually die off.
   - Over the years the science community has accepted and provided evidence of the Theory of Evolution. However, there are groups outside this community that refute it.



Activity - 35 minutes

1. Pass out Handout 1 - *Conflicting views about the Theory of Evolution* to each student.
2. Instruct the students to open the app *Charles Darwin Interview* on their devices. Students will have to complete the handout using the app. Students should work individually to complete the handout.
3. A class discussion will be held to share any opinions the students had about the various topics on the handout. The teacher should guide the students towards **the idea that even though the scientific community has proven the Theory of Evolution, there is still much debate over it as certain groups still refuse to accept the theory.**
4. For the second part of the activity, students will be divided into groups of four or five. Two groups will debate a specific topic randomly chosen by the teacher. Debate topics are given below.
   1) Creationism should be taught in school alongside the Theory of Evolution.
   2) Darwin's theory of evolution gives a pessimistic view of the world.
   3) Advances in technology and scientific knowledge is affecting evolution.
   4) Fossils are evidence of evolution.

Charles Darwin Interview
Lesson Plan: Paid Version



*** Below are general guidelines on how to conduct a class debate.

- For each topic, there should be two sides; the affirmative group and the negative group. The affirmative group will argue for and the negative team will argue against the topic.

- The order of speaking should be first the affirmative side then the negative side, Only for the final speakers for the rebuttal, the negative side will rebutt first then the affirmative side will conclude the debate.

- The time for each speaker can be determined by the teacher. Usually the first and last speakers get more time than the other speakers.

- Students should be informed that they cannot present any new arguments during the final rebuttals.

** At the end of this lesson plan is Handout 2 - *Our Debate*. This is a suggested resource for the students to use to organize their thoughts and prepare for the debate. The teacher could also use this as a formative assessment.

Wrap Up - 5 minutes

1. Ask students to complete an exit slip with the following questions on it.
    a. For each debate, which team do you think should have won?
    b. Explain your answer above.
    c. Write down one question you have or highlight an important point you had from each debate.

Evolution explains the similiarities and differences amongst organisms.

My opinion

Expert opinion

Everyone believes evolution explains how humans came to be.

My opinion

Expert opinion

Advances in scientific knowledge are affecting evolution.

My opinion

Expert opinion

There is enough evidence to prove evolution is occuring.

My opinion

Expert opinion

Handout 1- Conflicting Views About the Theory of Evolution

Using the app Charles Darwin Interview, find out more about the different opinions that surround the theory of Evolution. Use this chart to organize your findings.

Name _____ Date _____

Charles Darwin Interview

Charles Darwin Interview

Handout 2- Our Debate

Name of Debater: _____

Our Position: _____

	Main Points and Details
Opening Statement: A brief explanation of our team's position and reasons.	
Argument #1	
Argument #2	
Rebuttal: (Preplanned) What arguments do we think the other team will bring up? How can we refute them?	
Rebuttal: (To be filled during debate) What arguments does the other team bring up during the debate. How do we refute them?	
Closing Statement: A good way to end the debate.	

Charles Darwin Interview

NAME: _____

TOTAL SCORE:_____

Rubric for the Debate

CATEGORY	4 Excellent	3 Good	2 Satisfactory	1 Needs Improvement
Information	All information presented in the debate was clear, accurate and thorough.	Most information presented in the debate was clear, accurate and thorough.	Most information presented in the debate was clear and accurate, but was not usually thorough.	Information has several inaccuracies OR was usually not clear.
Understanding of Topic	The team clearly understood the topic in-depth and presented their information forcefully and convincingly.	The team clearly understood the topic in-depth and presented their information with ease.	The team seemed to understand the main points of the topic and presented those with ease.	The team did not show an adequate understanding of the topic.
Rebuttal	All counter-arguments were accurate, relevant and strong.	Most counter-arguments were accurate, relevant, and strong.	Most counter-arguments were accurate and relevant, but several were weak.	Counter-arguments were not accurate and/or relevant.
Organization	All arguments were clearly tied to an idea (premise) and organized in a tight, logical fashion.	Most arguments were clearly tied to an idea (premise) and organized in a tight, logical fashion.	All arguments were clearly tied to an idea (premise) but the organization was sometimes not clear or logical.	Arguments were not clearly tied to an idea (premise).
Presentation Style	Team consistently used gestures, eye contact, tone of voice and a level of enthusiasm in a way that kept the attention of the audience.	Team usually used gestures, eye contact, tone of voice and a level of enthusiasim in a way that kept the attention of the audience.	Team sometimes used gestures, eye contact, tone of voice and a level of enthusiasm in a way that kept the attention of the audience.	One or more members of the team had a presentation style that did not keep the attention of the audience.
Respect for Other Team	All statements, body language, and responses were respectful and were in appropriate language.	Statements and responses were respectful and used appropriate language, but once or twice body language was not.	Most statements and responses were respectful and in appropriate language, but there was one sarcastic remark.	Statements, responses and/or body language were consistently not respectful.