

VIEWS OF THE UNIVERSE DEBATE

Purpose

This debate will give students a better understanding of the viewpoints of different scientists and insight into why some people might have resisted or argued against new models of the Universe.

Practices

Claim Testing

A good debater will back up their claims with evidence. They will also press their opponents to back up their claims with support. Remind students of the power of claim testing here, even if they are still getting used to the practice.

Preview

Humans have been thinking about the nature of the Universe for a very long time. How was it formed? How big is it? What is its shape? What holds it together? Questions like these have proved very challenging, and a variety of interesting answers have been proposed for them over the course of time.

These answers have been influenced by a number of factors. Some of these influences have been cultural: What, for example, are the dominant religious beliefs of a society and what do those religious beliefs say about the nature of the Universe? What do the authority figures of a society say about the Universe, and why do people take their opinions seriously? Other influences relate to the nature of science and a society's ability to actually explore the Universe: What was the scientific outlook of a group of people, for example, that gave rise to a particular view of the Universe? What techniques and technologies did scientists have available to them in that time period for studying the Universe? In the end, the most powerful answers to questions about the Universe show the influence of cultural and technological scientific factors.

Process

Review the following debate format with students before you send them off to prepare. In this example, Team A represents Ptolemy's position and Team B represents Copernicus's.

1. Coin toss to determine which side goes first.
2. Team A (Ptolemy) has 4 to 6 minutes to present their position.
3. Team B (Copernicus) has 4 to 6 minutes to present their position.

Break: Each team has 3 to 5 minutes to prepare a 2-minute rebuttal.

4. Team A has 2 minutes to present their rebuttal.
5. Team B has 2 minutes to present their rebuttal.

Break: Each team has 3 to 5 minutes to prepare a 1-minute closing statement.

6. Team A has 1 minute to present their rebuttal.
7. Team B has 1 minute to present their rebuttal.

Debate ends: Tally the rubric scores (yours and the students) to determine the winner of each debate. In the case of a tie, you will decide the winner.

Walk your students through the Debate Prep Worksheet to help them understand how to prepare for the debate. Also walk them through the Debate Rubric—since this is the first debate, they will practice using the rubric to evaluate one another. Winners of each debate will be declared, but this should be somewhat informal. Normally, you will determine the outcome of debates, but this time students will help with the process so they can get familiar with the debate rubric (it also helps ensure they pay attention when they are part of the audience rather than part of the debating team).

VIEWS OF THE UNIVERSE DEBATE

Introduction

Whose view of the Universe was most important to the society in which it developed and contributed the most to collective learning: Ptolemy's, Copernicus's, Newton's, or Hubble's? In this debate activity, students will assume a position, build an argument in support of it, and defend it in an open debate within class.

Students will be assigned to "position groups," each representing one view of the Universe, and they should focus their research on two main questions:

- What were the most important cultural and scientific influences on the development of this view of the Universe?
- How did our views of the Universe stay the same and change over the time period from Copernicus to Hubble?
- How does the development of this view of the Universe contribute to collective learning (either by building on previous views of the Universe or by laying the foundation for later views or both)?

Preparation for the activity

Assign students to one of these position groups:

- PG 1: Ptolemy (and Aristotle?)
- PG 1: Copernicus (Brahe and Galileo?)
- PG 1: Newton
- PG 1: Hubble (and Leavitt?)

Each group should spend 20 to 30 minutes preparing their position. Everyone in the group will work together to identify material to support the group's position, and to create a list of arguments that other groups might use to argue against them group. One or two students might each work on the opening and closing statements while the group is conducting research; however, the entire group should edit these statements. Finally, each group will need to decide who will read the opening statement, rebuttal, and closing statement. While listening to the presentation of other groups, everyone should be taking notes for the rebuttal of the other teams' opening statements.

Have students work to generate ideas for the debate and prepare opening and closing statements. Students can use the graphic organizer provided to help formulate their positions. In addition to any research they do — in the library or through the Internet, for example — students should be sure to consult the resources

on the Big History Project website and their notes from the discussion of the material in Unit 2. Be sure to circulate the room and check in on student progress.

Practices

Claim Testing

A good debater will back up their claims with evidence. They will also press their opponents to back up their claims with support. Remind students of the power of claim testing here, even if they are still getting used to the practice.

Debate format

Opening statements

Each group will read their opening statement for the debate.

Groups meet to prepare rebuttals

Groups will spend 10 to 15 minutes preparing a rebuttal of the other groups' opening statements.

Rebuttals

Each group will read their rebuttal in response to the other groups opening statement.

Groups meet to modify closing statements

Each group will take 5 to 10 minutes to revise their closing statements to account for the other group's rebuttals.

Closing statements

Each group will read their closing statement for the debate.

Vote on the outcome

Once the debate is complete, ask students to vote for the group that made the best argument for its position. Remind them that the criterion is which group made the best argument, not which group argued the position they agree with.

VIEWS OF THE UNIVERSE DEBATE

Purpose

This debate will give you a better understanding of the viewpoints of different scientists and insight into why some people might have resisted or argued against new models of the Universe.

Practices

Claim Testing

A good debater will back up their claims with evidence. They will also press their opponents to back up their claims with support. Remember to use claim testing as part of your debate and debate prep.

Preview

Humans have been thinking about the nature of the Universe for a very long time. How was it formed? How big is it? What is its shape? What holds it together? Questions like these have proved very challenging, and a variety of interesting answers have been proposed for them over the course of time. These answers have been influenced by a number of factors. Some of these influences have been cultural: What, for example, are the dominant religious beliefs of a society and what do those religious beliefs say about the nature of the Universe? What do the authority figures of a society say about the Universe, and why do people take their opinions seriously? Other influences relate to the nature of science and a society's ability to actually explore the Universe: What was the scientific outlook of a group of people, for example, that gave rise to a particular view of the Universe? What techniques and technologies did scientists have available to them in that time period for studying the Universe? In the end, the most powerful answers to questions about the Universe show the influence of cultural and technological scientific factors.

Process

For this debate your teacher will assign you to one view of the Universe (Ptolemy's, Copernicus's, Newton's, or Hubble's), and your group will need to prepare an argument for why your view of the Universe was "best." In this case, "best" means your viewpoint was the most important to the society in which it developed and it contributed the most to collective learning. Make sure to find out which group you will be debating against so that you can prepare reasonable counterarguments.

Your class has been split into four groups because you are actually going to have two separate debates, Debate 1 and Debate 2. For example, Debate 1 might be Ptolemy vs. Copernicus, and Debate 2 might be Newton vs. Hubble. The Debate 1 teams will watch the Debate 2 teams debate, and vice versa. You'll also evaluate one another, practicing using the debate rubric.

VIEWS OF THE UNIVERSE DEBATE

Review the Debate Prep Worksheet before you get into your groups to prepare. In this example, Team A represents Ptolemy's position and Team B represents Copernicus's.

1. Coin toss to determine which side goes first.
2. Team A (Ptolemy) has 4 to 6 minutes to present their position.
3. Team B (Copernicus) has 4 to 6 minutes to present their position.

Break: Each team has 3 to 5 minutes to prepare a 2-minute rebuttal.

4. Team A has 2 minutes to present their rebuttal.
5. Team B has 2 minutes to present their rebuttal.

Break: Each team has 3 to 5 minutes to prepare a 1-minute closing statement.

6. Team A has 1 minute to present their rebuttal.
7. Team B has 1 minute to present their rebuttal.

Debate ends: Your teacher will tally the rubric scores to determine the winner of each debate. In case of a tie, your teacher will name the winner.

Review the Debate Prep Worksheet with your teacher—this is going to be really useful in helping you prep for the debate. Also, take a look at the Debate Rubric. Since this is the first debate, you'll practice using the rubric to evaluate one another. Winners of each debate will be declared, but this will be informal since it's the first one. Normally, your teacher will determine the outcome of debates, but this time you'll help with the process so you get familiar with the debate rubric (this also helps ensure you pay attention when you're part of the audience rather than part of the debate).

VIEWS OF THE UNIVERSE DEBATE

Introduction

Humans have been thinking about the nature of the Universe for a very long time. How was it formed? How big is it? What is its shape? What holds it together? Questions like these have proved very challenging, and a variety of interesting answers have been proposed for them over the course of time.

You will be assigned to “position groups,” each representing one view of the Universe, and should focus your research on two main questions:

- What were the most important cultural and scientific influences on the development of this view of the Universe?
- How did our views of the Universe stay the same and change over the time period from Copernicus to Hubble?
- How does the development of this view of the Universe contribute to collective learning (either by building on previous views of the Universe or by laying the foundation for later views or both)?

Preparation for the activity

Your teacher will assign you to one of the position groups below. You will be responsible for researching and arguing this position. As in any debate, you may be assigned to defend a position with which you do not actually agree. You don’t need to agree with the position, though you need to understand the perspective of those that do. Use the Internet and course materials to help you in your research.

- PG 1: Ptolemy (and Aristotle?)
- PG 1: Copernicus (Brahe and Galileo?)
- PG 1: Newton
- PG 1: Hubble (and Leavitt?)

Each group will spend 20 to 30 minutes preparing their position. Everyone in the group will work together to identify material to support the group’s position, and to create a list of arguments that other groups might use to argue against your group. One or two of your team members might each work on the opening and closing statements while the rest of the group is conducting research; however, the entire group should edit these statements. As a team, decide who will be reading your group’s opening statement, rebuttal, and

closing statements. While listening to the presentation of other groups, be sure to take for your rebuttal of the other teams’ opening statements.

Practices

Claim Testing

A good debater will back up their claims with evidence. They will also press their opponents to back up their claims with support. Remember to use claim testing as part of your debate and debate prep.

Debate format

Opening statements

Each group will read their opening statement for the debate.

Groups meet to prepare rebuttals

Groups will spend 10 to 15 minutes preparing a rebuttal of the other groups’ opening statements.

Rebuttals

Each group will read their rebuttal in response to the other groups opening statement.

Groups meet to modify closing statements

Each group will take 5 to 10 minutes to revise their closing statements to account for the other group’s rebuttals.

Closing statements

Each group will read their closing statement for the debate.

Vote on the outcome

Once the debate is complete, ask students to vote for the group that made the best argument for its position. Remind them that the criterion is which group made the best argument, not which group argued the position they agree with.

DEBATE RUBRIC

Directions: Use this rubric to evaluate debates. Mark scores and related comments in the scoring sheet that follows.

	Below Standard (1)	Approaching Standard (2)	At Standard (3)	Above Standard (4)
Overall Argument	Argument lacks logic and is unclear. Argument lacks supporting evidence.	Presents argument somewhat unclear. Uses at least one supporting piece of evidence.	Presents argument somewhat clearly. Some supporting evidence is provided.	Presents argument extremely clearly. Gives supporting evidence for all points made.
Explanation of Ideas and Information	Does not present information, arguments, ideas, or findings clearly, concisely, or logically. Argument lacks robust supporting evidence. It's difficult to follow the line of reasoning. Uses information that is not in line with the overall purpose. Does not consider opposing or alternative perspectives.	Presents information, arguments, ideas, or findings in ways that are not always clear, concise, or logical. Argument is supported by only some robust evidence. The line of reasoning is sometimes difficult to follow. Uses information that is only sometimes in line with the overall purpose. Attempts to consider and address opposing or alternative perspectives but does not do so clearly or completely.	Presents information, arguments, ideas, or findings clearly, concisely, or logically. Argument is well supported. The line of reasoning is logical and easy to follow and uses information that is appropriate for the purpose and audience. Clearly and completely addresses alternative or opposing perspectives.	Does an exceptional job presenting information, arguments, ideas, or findings clearly, concisely, and logically. Argument is well supported with robust, relevant, and interesting evidence. The line of reasoning is logical, easy to follow, well crafted, and uses information that is appropriate for the purpose and audience. Clearly and completely addresses relevant alternative or opposing perspectives.
Rebuttal and Closing Statement	No rebuttal offered. Makes no arguments against points the other side made. Does not explain why their side has the strongest argument.	Makes one or two points in rebuttal, but the logic is somewhat questionable or not supported by evidence. Makes one or two points against the points the other side made, but the logic is somewhat questionable. Explains why their side had the strongest argument, but the logic is flawed.	Makes some logical points as rebuttals, but doesn't support all points with evidence. Makes some logical arguments against the points the other side made. Explains why their side has the strongest argument, but could give more reasons.	Makes an abundance of logical points as rebuttals, and all points are supported with evidence. Makes an abundance of logical points against the points of the other side. Is thorough and logical in the explanation for why their side has the strongest argument.
Eyes, Body, and Voice	Does not look at the audience or make eye contact. Lacks poise (appears nervous, fidgety, slouchy). Speaks in a way that is hard to understand.	Makes infrequent eye contact with the audience. Shows some poise (limited fidgeting or nervousness). Speaks clearly most of the time, but may be difficult to understand or hear at times.	Keeps eye contact with the audience most of the time—only glances at notes or slides. Shows poise and confidence. Speaks clearly and is easy to understand.	Keeps eye contact with the audience throughout. Shows exceptional poise and confidence. Speaks clearly and in an engaging way that is interesting to listen to.



DEBATE RUBRIC

Name: Date:

Directions: Use this table to evaluate and comment on elements of a debate. Put an X in the cell that denotes the grade. Use the other cells for comments.

	Below Standard (1)	Approaching Standard (2)	At Standard (3)	Above Standard (4)	Score
Overall Argument					
Explanation of Ideas and Information					
Rebuttal and Closing Statement					
Eyes, Body, and Voice					
Total Score					