Welcome Scientists! Engoodi and Unicef are two visitors from the distant plant, Odabi, who accidentally stumbled on Earth. They are confused about the presence of a protective atmosphere surrounding the Earth and the changes in temperature and pressure. As scientists, explain to our visitors about the characteristics of each main layer of the atmosphere so that both Engoodi and Unicef can report back to the inhabitants of Odabi.

Tasks

Research, Regenerate, Refine! Research, explore, and learn about the layers of the atmosphere and about jet streams to teach your classmates and your visitors about what you have just learned. Follow your specific group guidelines to accomplish your goal and utilize the suggested resources to bring your end-product alive.

Process

You will be divided into groups of five scientists. Group members will select the following: Principal Investigator (PI): coordinates all group activities, responsible for completion of all delegated tasks, ensure that group members follow and meet all project guidelines and deadlines, provide progress reports to the teacher. Research Assistant - assists PI with carrying out specific tasks, preparing and maintaining all necessary materials and resources, request or acquire necessary equipment and resources as needed for the project. Recorder - maintains accurate records of tasks completed, report to PI. Presenter - is responsible for putting together a ten-minute creative, informative, entertaining, presentation for classmates and visitors. Assessment Designer - is responsible for creating an assessment of ten questions including multiple choice, true and false, completion, and short answer to test classmates and visitors understanding of your presentation. Include a blank test and an answer key.

Group 1: Create a timeline to show how the atmosphere was explored from the ground and from space. Include the historical time period and the names of the explorers. The timeline should be showcased on a display board and should be brought to life. Type a two-page research report on one of the explorers of the atmosphere and include their major contribution to knowledge about the atmosphere. Include an additional page for your references.

Group 2: Create a diagram of the layers of the atmosphere that resembles Figure 9 on page 117. Include the characteristics of each main layer and label the layers. The diagram should be showcased on a display board and should be brought alive. Type a two-page research report describing the main characteristics of each layer. Include an additional page for your references. Font should be black, the font size is 12, and spacing is double-spaced. Pictures, diagrams, and illustrations are encouraged in your report.

Group 3: Create a short song and dance describing the four main layers of the atmosphere and describe the main characteristics of each layer. Type a two-page research report describing the main characteristics of each layer. Include an additional page for your references. The font should be black, the font size 12, and spacing is double-spaced. Pictures, diagrams, and additional illustrations are encouraged in your report.

Group 4: Create a short rap and cartoon describing the four main layers of the atmosphere and describe the main characteristics of each layer. Type a two-page research report describing the main characteristics of each layer. Include an additional page for your references. The font should be black, the font size 12, and spacing is double-spaced. Pictures, diagrams, and additional illustrations are encouraged in your report.

Group 5: Create a short rap and cartoon describing the four main layers of the atmosphere and describe the main characteristics of each layer. Type a two-page research report describing the main characteristics of each layer. Include an additional page for your references. The font should be black, the font size 12, and spacing is double-spaced. Pictures, diagrams, and additional illustrations are encouraged in your report.

Group 6: Research and explore jet streams, which are winds that blow horizontally around Earth at an altitude of about 10 km. Find out how the jet stream affects weather patterns on Earth. Create a diagram to showcase your findings about jet streams. The diagram should be showcased on a display board and should be brought to life. Type a two-page research report describing the main characteristics of each layer. Include an additional page for your references. The font should be black, the font size 12,
Rubric for Layers of the Atmosphere Webquest

Task Description: The atmosphere is divided into four layers: the troposphere, the stratosphere, the mesosphere, and the thermosphere. Students will research to learn about jet streams and the different layers of the atmosphere.

Criteria weight
4 – Exemplary
3 – Accomplished
2 – Developing
1 – Beginning

Cooperation 25%
- Does a full share of work or more
- Assigns a clearly defined role
- Group members perform roles effectively
- Always considers all views and helps team to reach fair decision
- Never argues with teammates
- Group tries to solve its problems by itself without seeking outside help
- Does an equal share of work
- Assigns roles, but roles are not clearly defined or consistently adhered to
- Usually considers all views and helps team to reach fair decision
- Rarely argues
- Group seldom solves its problems as a team and asks classmates or teacher for help
- Does almost as much work as others
- Assigns roles, but roles are not adhered to
- Often sides with friends instead of considering all views
- Sometimes argues
- Group settles problems and gives up easily
- Does less work than other group members
- No effort made to assign roles to group members
- Acts as cliques or individuals rather than group
- Arguments within group
- Little attempt to solve problems; gives up easily
- Organization 20%
- Takes initiative in helping the group get organized and setting times and places to meet
- Product is extremely well organized with an introduction, body, and conclusion
- Has realistic, prioritized, and measurable goals
- Highly productive in accomplishing assignment
- Works agreeably with partner(s) concerning organization and times and places to meet
- Product is organized with an introduction, body, and conclusion
- Goals are established, but some are too general
- Accomplished basic assignment
- Can be coaxed into meeting with other partner(s)
- Somewhat organized ideas; not presented in sequence
- Goals not clearly defined
- Barely accomplishes the job
- Did not meet partner(s) at agreed times or places
- Lack of organization; choppy and confusing; format difficult to follow
- No goals established
- Does not accomplish assignment
- Research 20%
- Collects and contributes accurate content
- Goes above and beyond to research information
- Communicates and shares all information with the group
- Always does the assigned work without having to be reminded
- Collects and contributes mostly accurate content
- At times, takes initiative to find extra information
- Shares information with the group
- Usually does the assigned work; rarely needs reminding
- Collects and contributes somewhat accurate content
- Uses only materials provided
- Shares some information with the group
- Rarely does the assigned work; often needs reminding
- Collects and contributes inaccurate content
- Does not utilize resources effectively
- Keeps information to self; does not share with group
- Relies on others to do the work
- Member Responsibility 25%
- Provides many ideas for the assignment
- Clearly communicates desires, ideas, personal needs and feelings
- Listens and speaks a fair amount
- Each team member is treated with respect and is encouraged
- Hands in all assignments on time
- Participates in discussions about the assignment
- Usually shares opinions and thoughts with other partner(s)
- Listens, but sometimes talks too much or too little
- Often encourages and respects team members
- Hands in most assignments on time
- Listens to others; on some occasions, makes suggestions
- Rarely expresses feelings or preferences
- Usually does most of the talking, rarely allowing others to speak; or seldom talks, allowing others to dominate
- Some members are not encouraged or respected
- Hands in most assignments late
- Seems bored with conversations about the assignment
- Never/almost never spoke up
- Monopolized conversation; does not allow others to speak
- Does not respect or encourage other members
- Does not hand in some/all assignments
- Presentation 10%
- Presentation is clever and original
- Engaging; captures interest of audience
- Appropriate variety of visual aids
- Visual aids add to or clarify presentation
- Each presenter speaks clearly and loudly; good eye contact; appropriate body language
- Members contribute equally to the presentation
- Presentation is thoughtful
- Presentation is well done; interesting to audience
- Some use of visual aids
- Visual aids somewhat add to or clarify presentation
- Most of the time, presenter speaks clearly and loudly; some eye contact; some use of appropriate body language
- Members contribute equally to the presentation
- Presentation is thoughtful
- Presentation is well done; interesting to audience
- Some use of visual aids
- Visual aids somewhat add to or clarify presentation
- Most of the time, presenter speaks clearly and loudly; some eye contact; some use of appropriate body language
- Most of the members contributed equally to the presentation
- Presentation is at times clearly presented
- Presentation is at times interesting to audience
- Limited use of visual aids
- Visual aids do not clarify or add the presentation
- Presenter is hard to hear; little eye contact; poor body language
- Some members did not contribute equally to the presentation
- Little creativity used; bland
- Presentation is hard to follow; poorly organized
- “No use of visual aids”
- Presenter cannot be heard; no eye contact; poor body language
- Some members did not contribute to the presentation

Assignment Score

Score

Category and Score

Total Score

Evaluation

Congratulations! You made it on this incredible journey about discovering, learning, and teaching about our great planet and its atmosphere. Now be reflective about all the information that you have learned during this journey, about any challenges you faced, and what you could have done to have a better outcome of the project. Our atmosphere protects us and other living things. Continue to be ambassadors of the Earth and continue to Reduce, Reuse, and Recycle!
Purpose: Our planet is currently threatened by our negligent actions and activities, some of which we are unaware of.

Duration: Three 90-minute sessions

Objectives:
1. Students will identify and describe the main layers of the atmosphere and the characteristics of each layer.
2. Describe how jet streams affect weather patterns on Earth.
3. Design and create models, diagrams, illustrations, and other visuals to present their findings.
4. Collaborate with their classmates and be responsible for their roles and duties in a group activity.
5. Communicate effectively their research and findings in creative presentations.

Standards

Next Generation Science Standards (NGSS):
MS-ESS2-5. Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.

MS-ESS3-4. Construct an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem.

Common Core State Standards (CCSS):
RST.6-8.7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

SL.8.5. Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.

Credits

Images
- www.go4fun.yolasite.com
- www.clipartpanda.com
- www.kidsgeo.com
- www.teachers.greenville.k12.sc.us
- www.chenloyola.wordpress.com

Other