PBL

Biome Special Mission

2006

Teacher: Pamela Miller

School: Southwood Elementary

Grade level(s): 5th grade

Subjects: Science, Math, Reading, Writing, Computer Technology, and Art
Essential Question:

How do Earth’s major biomes effect the interdependence of plants and animals?

Sub Questions:

◊ What is a Biome?
◊ What is an ecosystem?
◊ How do organisms interact within a community?
◊ What are the major land biomes?
◊ What are the major aquatic biomes?
◊ How does an ecosystem support a variety of organisms?
◊ How does light, temperature and soil composition effect plant and animal life in an ecosystem?
◊ How have humans effected ecosystems?
◊ How are materials recycled in nature?
◊ What are pollutants?

Students are encouraged to come up with additional sub questions using higher order thinking skill based questions.

The theme or “big ideas” for this project.

Understand the purpose of each of the major biomes and how the populations interact with the communities.

Key skills students will learn in this project.

Research (Biomes), Making Judgments, Problem Solving, Cause & Effect, Internet search, and Multimedia

Skills that will be assessed

Record keeping of information obtained
Evaluation of knowledge learned as displayed in final product.

Habits of mind that students will practice in this project

Problem Solving, Making Judgment, Cause & Effect
Content standards that students will learn in this project

Science:
1.01 Describe and compare several common ecosystems (communities of organisms and their interaction with the environment).
1.02 Identify and analyze the functions of organisms within the population of the ecosystem:
   • Producers.
   • Consumers.
   • Decomposers.
1.03 Explain why an ecosystem can support a variety of organisms.
1.04 Discuss and determine the role of light, temperature, and soil composition in an ecosystem's capacity to support life.
1.05 Determine the interaction of organisms within an ecosystem.
1.06 Explain and evaluate some ways that humans affect ecosystems.
   • Habitat reduction due to development.
   • Pollutants.
   • Increased nutrients.
1.07 Determine how materials are recycled in nature.

Reading:
2.01 Use metacognitive strategies independently and flexibly to monitor comprehension and extend vocabulary (e.g., skim, scan, reread the text, consult other sources, ask for help, summarize, paraphrase, question).
2.02 Interact with the text before, during, and after reading, listening, and viewing by:
   • making predictions.
   • formulating questions.
   • supporting answers from textual information, previous experience, and/or other sources
   • seeking additional information.
   • making connections with previous experiences, information, and ideas.
2.07 Evaluate the usefulness and quality of information and ideas based on purpose, experiences, text(s), and graphics.
3.06 Conduct research (with assistance) from a variety of sources for assigned or self-selected projects (e.g., print and non-print texts, artifacts,
people, libraries, databases, computer networks).

**Technology:**
1.15 Recognize, discuss, and use online terms/concepts (e.g., search strategies, citing resources, filters, AUP/IUP). (6)
2.15 Select, discuss and evaluate digital resources and information for content, accuracy, usefulness and cite sources. (6)

**Language:**
1.02 Select key vocabulary critical to the text and apply appropriate meanings as necessary for comprehension.
1.03 Increase reading and writing vocabulary through content area study and wide reading
4.02 Use oral and written language to:
   • formulate hypotheses.
   • evaluate information and ideas.
   • present and support arguments.
   • influence the thinking of others.
4.10 Use technology as a tool to enhance and/or publish a product.

**Math:**
1.02 Develop fluency in adding and subtracting non-negative rational numbers (halves, fourths, eighths; thirds, sixths, twelfths; fifths, tenths, hundredths, thousandths; mixed numbers)
4.01 Collect, organize, analyze, and display data (including stem-and-leaf plots) to solve problems.
4.02 Compare and contrast different representations of the same data; discuss the effectiveness of each representation.
4.03 Solve problems with data from a single set or multiple sets of data using median, range, and mode.

**Arts Education:**

**Theater:**
3.01 Participate in making artistic choices for the scenery in a presentation.
8.06 Participate in and experience informal and formal presentations.

**Visual Arts:**
1.07 Elaborate on an idea or theme.
2.06 Create portraits, still lifes and landscapes from real life observation or memory.

**Background:**

Educational information has been compiled in order to produce an interesting PBL that would encompass several aspects of the NCSCOS for the students.

The PBL will allow students the ability to address multiple disciplines while also having the chance to pursue any questions that they may have while working on the project. Media and technology will also play an important role in producing the end product.

The problem addressed in the PBL places the students into a “real world” situation as they are the “supposed” responsible parties who need to fix our world biomes.

It is believed that all students will have the opportunity to demonstrate what they have learned in an interesting and appropriate manner.
Problem: The recent change in weather patterns has created intense turmoil within the major biomes of the world. Ecosystems have been displaced and the animal and plant life is struggling for survival. The President of the United States has appointed you as the head of a new cabinet to help correct this growing problem. You are now the Chief Officer of the National Bureau of Biome Security. It is now your responsibility to re-create these biomes of the world and put everything back into its rightful place. Life as we know it depends on you!

Products:

Task 1: You will keep a detailed log on all of the components of the various biomes. This log must include animal habitats, plant life, landform patterns, and weather/climate for each particular biome.

Task 2: You will need to create a life size artistic visual to appropriately model what the actual biome looks like. This must include a variety of plants and animals within the ecosystem.

Task 3: You will report your findings in a multi-media presentation that will be presented to other classes within the school. The multi-media presentation will include pictures and sound.

Task 4: You will participate in a Biome tour with other fifth grade classes.

Steps in the Project:

Early in the Project:
- Create KWL regarding biomes.
- Learn how to create a multimedia presentation that includes sound and pictures.
- Learn the major biomes of the world.

During the Project:
- Gathering research information using a variety of resources
- Make detailed notes that will be kept in a journal.
- Research the various parts of a biome.
• Design and create a multimedia project that details your findings about a particular biome.
• Participate in designing and creating a biome environment that will transform our classroom into the particular biome assigned.

End of the Project:
• Present your multimedia presentation to our class.
• Participate with other fifth grade classes as you tour the biomes of the world.
• Evaluate and reflect on the PBL

Assessment of Products:

Product: Detailed Report
Criteria: includes detailed information learned that assists in answering the sub questions and the essential question posed.

Product: Participation
Criteria: Following directions and working in a cooperative group to accurately make visual representations for the specified biome(s).
Assessed collaboratively

Product: Project
Criteria: Completion and presentation of multimedia project based on the rubric given to students at time of assignment. Assessed independently

Product: Participation
Criteria: Actively engaged during the Biome tour. Appropriate questions are asked and connections can be made from what is viewed and what has been learned through research.
Skills Needed by Students:

### Knowledge and Skills Needed

<table>
<thead>
<tr>
<th></th>
<th>Already Learned</th>
<th>Taught Before Project</th>
<th>Taught During Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Skills</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Inquiry based research</td>
<td></td>
<td>X</td>
<td></td>
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<tr>
<td>Using Internet Research</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Using Multimedia (iMovie, Appleworks, Kidspiration, KidsPix, iTunes, etc.)</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>Using a Webquest</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Making Judgments</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Problem Solving</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Cause and Effect</td>
<td>X</td>
<td>X</td>
<td>X</td>
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</tbody>
</table>

Materials and Lessons:

- Websites on Biomes
- Internet
- Multimedia programs
- Variety of research materials available in the classroom
- Computer availability everyday
- Scheduled Field Trips - virtual field trips will work also
- Obtain books about the different biomes
- Art supplies
- Graphic Organizers

Mini lessons on:

- How to use an index
- How to site information
- How to paraphrase

- Various biomes and the components within
- Using graphic organizers
- Geographical locations
- Using various multimedia
- Using appropriate technology
- Note-taking skills
- Types of vegetation and animals
- Creating oral reports
Ideas for presentations:

• Ideally there would be full participation with other 5th grade classes. Each class would be transformed to represent a different biome. During the biome tour the students would watch a multimedia presentation of what the students research in relation to the biome that is displayed in the classroom.
• As a one classroom project, different spots of the room could be designated for different biome types. Presentation of the biomes will be combined so that the students will view a multimedia presentation that encompasses all of the major biomes.
• Biomes could also extend out into the hallway, so that others within the school could have the exposure to biomes before coming to 5th grade.
• Biome tour could also be implemented completely in a technological sense, meaning that they could use resources off of the web and programs available at school to create a biome tour that is viewed entirely by using a computer. Could also be displayed on a white screen by using a projector.

• Print Resources:
  • What Is a Biome? (Science of Living Things) by Bobbie Kalman
  • Biome Atlases
  • Any other information book about biomes or individual biomes that are accessible

• Websites:
  • http://www.geocities.com/EnchantedForest/Tower/1217/biome.html
  • http://www.campbellsavona.wnyric.org/New_Folder/website/September/5th%20Grade/5th%20Grade%20Biomes/Fifth%20Grade%20Biomes.htm
  • http://www.kusd.edu/schools/bose/bose-biomes-0304/biomes-links.htm
  • http://www.nationalgeographic.com/earthpulse/rainforest/index_flash.html
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<table>
<thead>
<tr>
<th>Day 1</th>
<th>Introduce the PBL</th>
<th>Day 2</th>
<th>Discuss ecosystems and different geographical regions *Create water ecosystem using bottle habitat activity continue to observe daily</th>
<th>Day 3</th>
<th>Introduction to Deciduous Forest, Rain Forest, and Grassland Biomes record notes about habitat observations daily</th>
<th>Day 4</th>
<th>Introduction to Tundra, Taiga, and Desert Biomes Mini Lesson on using informational text resources</th>
<th>Day 5</th>
<th>Introduction to Aquatic Biomes Continue with using information text resources - identify parts of informational text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 6</td>
<td>Take a virtual field trip to the rainforest. Using national geographic website</td>
<td>Day 7</td>
<td>Introduce multimedia products continue working with creating projects using multimedia through day 10</td>
<td>Day 8</td>
<td>Independent research Mini lesson on note taking and making outlines</td>
<td>Day 9</td>
<td>Independent research continue through day 12 Mini lesson day 9 and 10 on presenting Oral reports</td>
<td>Day 10</td>
<td>Research.</td>
</tr>
<tr>
<td>Day 11</td>
<td>Research</td>
<td>Day 12</td>
<td>Creation of Multimedia Project Revisit KWL</td>
<td>Day 13</td>
<td>Creation of Multimedia Project</td>
<td>Day 14</td>
<td>Creation of Multimedia Project</td>
<td>Day 15</td>
<td>Creation of Multimedia Project</td>
</tr>
<tr>
<td>Day 16</td>
<td>Create Biome atmosphere in the classroom</td>
<td>Day 17</td>
<td>Create Biome atmosphere in the classroom</td>
<td>Day 18</td>
<td>Create Biome atmosphere in the classroom</td>
<td>Day 19</td>
<td>Create Biome atmosphere in the classroom</td>
<td>Day 20</td>
<td>Combine projects to reflect the classroom biome</td>
</tr>
<tr>
<td>Day 21</td>
<td>Create classroom multimedia presentation</td>
<td>Day 22</td>
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<td>Day 23</td>
<td>Review presentation before actual presentation on Day 24</td>
<td>Day 24</td>
<td>Biome Tour</td>
<td>Day 25</td>
<td>Reflection and evaluation of PBL</td>
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<tr>
<td>Day 22</td>
<td>Create classroom multimedia presentation</td>
<td>Day 23</td>
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<td>Day 25</td>
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## Rubric

### Biome Special Mission PBL

<table>
<thead>
<tr>
<th>Teacher: ____________________</th>
<th>Student: ___________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category</strong></td>
<td><strong>A</strong></td>
</tr>
<tr>
<td>Notes</td>
<td>Notes are detailed and are recorded and are recorded in an extremely neat and orderly fashion.</td>
</tr>
<tr>
<td>Thematic Accuracy</td>
<td>The student's portion of the mural fits the theme of the assignment and all of the team's items are accurately placed on the background. Example: Student has drawn a dwarf palm and has placed it in the understudy layer in a rainforest mural.</td>
</tr>
<tr>
<td>Group Participation</td>
<td>The group worked well together with all members contributing significant amounts of quality work. All group members participated in discussion and actively listened to others.</td>
</tr>
<tr>
<td>Research</td>
<td>Researchers independently identify at least 4 reasonable, insightful, creative ideas/questions to pursue when doing the research.</td>
</tr>
<tr>
<td>Multimedia</td>
<td>Makes excellent use of font, color, graphics, effects, etc. to enhance the presentation.</td>
</tr>
</tbody>
</table>
PBL Checklist

Teacher Name: Ms. Miller

Student Name: ___________________  Date: ________________
Project: Biome Special Mission - PBL

CATEGORY  RESPONSIBILITIES

Research
☐ I used a variety of helpful resources.
☐ I used information from textbooks.
☐ I used internet resources.
☐ I found recent materials so my information is up-to-date.
☐ I used only reliable resources.
☐ I used resources that listed facts.
☐ I collected enough information to get a good understanding of my topic.
☐ I wrote down where I got each piece of information.
☐ I correctly cited all resources used in the final project.

Cooperative Work
☐ I worked well with my group members.
☐ I showed respect and support for fellow team members.
☐ I listened to my group's ideas.
☐ I did my share of the work.
☐ I contributed both time and effort.
☐ I helped us succeed.
☐ My work made this project better.

Multimedia
☐ I used photographs and sound in my presentation.
☐ I thought about questions I needed to answer in my presentation.
☐ I thought about things I wanted to find for my presentation.

Participation
☐ I participated in all activities