A Trip Around the Globe: A Study of Earth’s Continents and Their Biomes

It is important for students to gain a better understanding of the world outside of their small city, Hartford. Therefore, we have decided to focus on engaging students in gaining a better understanding of the different continents and their biomes. Students at the various Hartford public schools in which we have spent our placement time in are only required to receive sixty-seven hours of science instruction over the course of a year. This is minimal compared to the required five hundred and three, and two hundred twenty hours of English Language Arts and Mathematics. These statistics are much lower than the state requirements, which dictate ninety-eight hours of science instruction\(^1\). Therefore, we have decided that designing a science-based curriculum project would be most beneficial. This is because students will be provided with knowledge of a subject area that is not given sufficient attention in Hartford public schools.

By learning about the Earth’s different biomes, our curriculum will broaden students’ view of the world that they live in. The lesson is designed to open their eyes to the diversity of the planet and show them that there is a world outside of the city they live in. Through studying the different biomes of the world, students may become motivated to conduct further research, and therefore become inspired to pursue a career in the field of science. The curriculum may also instill in them a desire to perhaps someday see the world outside of Hartford, further

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\(^1\) Strategic School Profiles: Moylan Elementary, Burns Academy of Latino Studies, McDonough, MD Fox
supplementing what they are learning in the classroom. Such a curriculum will give the students a richer and more meaningful schooling experience.

This curriculum is designed for a classroom of around twenty, third grade students, in an urban Hartford public school. However, the curriculum itself may be adjusted for varying class sizes. The lessons will each be seventy-five minutes long, and will take place over the course of a typical five-day school week. The subject materials that will be covered in the curriculum include Environmental Science, Geography, Art, and English Language Arts. The Sciences, Social Studies, and the Arts are often overlooked in urban public schools, and therefore our curriculum emphasizes their importance. However, we understand that in an urban public school setting, such as Hartford, it is of the utmost importance that students develop their English Language skills due to the many language barriers ethnic students face. Therefore, we have also made the study of English Language Arts a prominent feature of our curriculum. We hope that the prescribed activities will allow students to develop and improve their research skills, think creatively and artistically, and give them an opportunity to practice their oral presentation skills. The students will also be working in groups of two, which model Robert Slavin’s structured dyads, for the majority of the curriculum. This curriculum will also apply Howard Gardner’s theory of multiple intelligences because it draws from various intelligences: linguistic, spatial, and naturalist\(^2\). A student that possesses linguistic intelligence exemplifies an ability to comprehend the world, through the use of language. A student that possesses spatial intelligence demonstrates the ability to form visual memories of their surrounding environment. A student that possesses naturalist intelligence is one who is capable of fully understanding the various elements of the world, through environmental features.

Our curriculum is designed to meet six different objectives, derived from the Connecticut Framework⁴, and have been chosen in accordance to what we believe is most important. The first objective is that students will develop and improve their research skills. This corresponds with the Connecticut Framework Standard 2.2a: “Develop and discuss multiple responses while reading, listening, or viewing texts”. The second objective we wish to accomplish is that students will learn to classify the different biomes and the plants and animals that live within them, and develop their writing skills through group reports on their biomes. This corresponds with the Connecticut Framework Standards 3.2,1: “Compare and contrast the external features and behaviors that enable different animals and plants (including those that are extinct) to get food, water, and sunlight; find mates; and be protected in specific land and water habitats”, 1.1c: “Recognize and organize relevant information in proper sequence to use in a summary”, and 4.2a: “Use sentence patterns typical of spoken language to produce text”. Our third objective is that students will learn how to apply background information to their group projects. This corresponds with the Connecticut Framework Standard 1.1a: “Use pre-reading activities to activate prior knowledge and establish purpose”. Our fourth objective is that students will become more comfortable sharing information with the class through oral presentations. This corresponds with the Connecticut Framework Standards 3.1a: “Use oral language with clarity, voice, and fluency to communicate a message” and 4.2b: “Use appropriate language as related to audience”. The fifth objective is that students will express themselves creatively. This corresponds with the Connecticut Framework Standard 3.2f: “Publish and/or present final products in a myriad of ways, including use of the arts and technology”. Finally, our sixth objective is that students will collaborate and cooperate with their peers. Though this is not

directly correlated with a Connecticut Curriculum Framework standard, we believe that it is important for students to develop communication skills throughout this curriculum.

The first day of the five-day curriculum will consist of an introduction to the Earth’s continents and oceans. This day corresponds with the first part of the second objective: Students will learn to classify the different biomes and the plants and animals that live within them. Class will begin with the teacher introducing to the names of the continents and oceans, by asking them to call out any they may already know. Following this introduction, the students will then be presented with a globe and map, with which they will be able to gain a better understanding of their locations in relation to the rest of the planet. The students will then listen to, and learn, the “Continents Song” (Resource 1), provided by the teacher. This will engage students in a fun and creative way that will reinforce what they had just learned, and serve as a memory tool. The teacher will then show the students pictures of the various climates, animals, plants that may be found throughout the oceans and continents (Resource 2). By the end of this day, students will be able to name all seven continents and four oceans, and possess a general understanding of the world’s different climates, animals, and plants.

On the second day, the students will learn what defines a ‘biome’. This day corresponds with the second objective: Students will learn to classify the different biomes and the plants and animals that live within them, and the sixth objective: Students will collaborate and cooperate with their peers. At the start of class, the teacher will introduce the students to the idea that the world is a diverse place, and that it contains many different environments, known as biomes. At this point, students will gather around the teacher, as he or she reads them the book, “What is a Biome? (Science of Living Things) by Bobbie Kalman (Resource 3). Students will then be asked to brainstorm a list of the planet’s different biomes, with the help of the teacher. After, the
teacher will place the students into groups of two. These groups will be based off of Beth Rubin’s theories on grouping, which dictates that students of varying ability levels be placed together\(^4\). This enhances the learning experience of both partners because the lower ability level student benefits from the higher ability level student’s knowledge, and the higher ability level student benefits from the interaction of aiding a peer. The teacher will be expected to predetermine these ability levels with discrepancy. After being assigned their group, students will arrange their desks so that they are sitting with their group partner. This will be the seating arrangement for the remainder of the week. Each group will then be assigned a different biome. By the end of this day, students will be able to define the word ‘biome’ through classroom discussion, and information provided by the book.

The students will spend the third day gathering and compiling information, and the teacher will introduce the final project. This day corresponds with the first objective: Students will develop and improve their research skills, the second objective: Students will learn to classify the different biomes and the plants and animals that live within them, and develop their writing skills through group reports on their biomes, and the third objective: Students will learn how to apply background information to their group projects. The first part of the class period will take place in the school library. The librarian will speak to the students about the many uses of a library, and explain to them how they can use the library’s resources to help them with their project. The librarian will then direct the students to a cart of books, containing information on various biomes. Each student will be asked to find a book on their biome, and will then be given ten minutes of time to individually look over their books. Afterwards, students will meet with their partners, and will be given a worksheet (Resource 4) that they must complete together.

Following Robert Slavin’s theories of cooperative learning, students will be asked to share two pieces of information that he or she has learned from looking at the book, and vice versa. This is an example of Slavin’s structured dyadic approach. The teacher will then introduce the students to the project: to create a model of their biome. The requirements for the project will be written on the board, and will consist of three animals, two plants, an accurate depiction of the climate, and any other defining feature of their biome. Each student will be provided with a shoebox to build his or her model in. The teacher will be responsible for providing the necessary materials for creating the biome models. These may include construction paper, markers, crayons, modeling clay, glue sticks, scissors, and magazines. By the end of this day, students will have been introduced to basic library skills, have completed their biome worksheet, and have been introduced to the final project.

On day four, students will spend the entire period constructing their biome models. This covers the fifth objective: Students will express themselves creatively, and the sixth objective: Students will collaborate and cooperate with their peers. The teacher will be walking around the room, offering assistance and advice when so as not to interfere with students’ creativity. At the end of the period, a sheet will be handed out, containing oral presentation guidelines (Resource 5). The students’ homework for that night will be to read the guidelines sheet, in preparation for their oral presentations the next day. By the end of this day, students will have been able to apply their newfound knowledge in a concrete representation.

On the fifth and final day of the curriculum, the students will be presenting their biome models and worksheets to the class, and playing the Biome Game. This day corresponds with the fourth objective: Students will become more comfortable sharing information with the class.

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through oral presentations. The students will be allowed the first ten minutes of class to prepare for their presentation with their partner, keeping in mind the oral presentation guidelines they had read the night before. Each group will then present their biome model and completed worksheet in a five-minute presentation. The remaining fifteen minutes of class will be spent playing the Biome Game. In this game, half of the class will be given a card with the name of a biome on it, while the other half of the class will be given a card with a picture of either a plant or animal belonging to one of the biomes on it. Students will then have to match their biome with the corresponding plant or animal, and vice versa. This game will give students the chance to apply what they have just learned from each other’s presentations. The biome models will then be placed around the classroom as a display for parents, and other students and teachers to admire. By the end of this day, students will have been given a chance to practice their oral presentation skills, possess new knowledge of the world they live in, and been given a chance to interact with their peers while reinforcing what they had just learned.

The teacher will evaluate the students based on a predetermined grading rubric (Resource 6). The grading rubric will address three different types of criteria: participation, completion of the worksheet, and the oral presentation. The grading rubric will clearly list the requirements that must be met to earn the respective score. Each student will receive a score ranging from one to five, for each category. The teacher will then evaluate each student. This will be supplemented by a student evaluation, in which students will then be given the opportunity to give themselves the grade they believe they deserve. The teacher, taking into consideration the student’s evaluation of himself or herself, will determine their final score, out of fifteen.

By the end of this curriculum, students will have had the opportunity to explore subject areas that they are not usually exposed to. Students will have met objective one, developing and
improving their research skills, because they will have been introduced to the ways in which books can be sources of information. Students will have met objective two, learning to classify the different biomes and the plants and animals that live within them, and developing their writing skills through group reports on their biomes, through the Biome Game, the creation of the biome models, and the successful completion of the biome worksheet. Students will have met object three, learning how to apply background information to their group projects, because they will have taken the information presented through the class lessons presented by the teacher, and used this information to develop their final projects. Students will have met objective four, becoming more comfortable sharing information with the class through oral presentations, because they will have been given an opportunity to speak in front of their peers in a safe and encouraging environment, with the presence of their partner serving as a source of comfort. Students will have met objective five, expressing themselves creatively, through the artistic freedom they were given in the creation of their biome models. Finally, students will have met objective six, collaborating and cooperating with their peers, because the majority of the curriculum will have focused on group work and interactions with the entire class through class discussions and the Biome Game. As a result, students who have experienced this curriculum will leave with a richer knowledge of the world in which we reside.
References

Resources (see attached)
#1: The Continents Song: (http://www.youtube.com/watch?v=Lf--PQNDn7g)
#2: Presentation of Continents and their different environments
#4: Biome Worksheet
#5: Oral Presentation Guidelines
#6: Grading Rubric
Resource #3

“What is a Biome? (Science of Living Things) by Bobbie Kalman
Resource #4: Biome Worksheet

Names: _______________________________

Biome: _______________________________

1. Where is your biome located?

2. What is the climate of your biome? (You may either write or draw the answer – or both).

3. What types of plants are in your biome? (At least two). (Write, draw, or both).

4. What types of animals are in your biome? (At least three). (Write, draw, or both).
Resource #5

Oral Presentation Guidelines

Things to Include:
  • Location
  • Typical weather
  • Common animals
  • Common plants

How to Present:
  • Speak clearly and loudly
  • Take turns
  • Stand straight
  • Eye contact
  • Stand still

*Remember to have fun!
<table>
<thead>
<tr>
<th>Number of Points Awarded</th>
<th>Class Participation</th>
<th>Worksheet</th>
<th>Oral Presentation/Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Does not contribute to group or class discussions and does not pay attention</td>
<td>Does not answer worksheet questions</td>
<td>Does not include any of the required information, lack of preparedness, and time spent speaking is not divided evenly between presenters</td>
</tr>
<tr>
<td>2</td>
<td>Does not contribute to group discussions or group work, but is attentive in class</td>
<td>Answers only a few questions on the worksheet</td>
<td>Includes some of the required information, presentation is dominated by one presenter</td>
</tr>
<tr>
<td>3</td>
<td>Is attentive and contributes some to small group discussions</td>
<td>Answers questions on the worksheet, but does not use complete sentences</td>
<td>Includes most of the required information, presentation is still mostly dominated by one presenter</td>
</tr>
<tr>
<td>4</td>
<td>Speaks when called on in class discussions, contributes to small group discussions, is attentive</td>
<td>Answers questions on the worksheet, and writes mostly in complete sentences</td>
<td>Includes all required information, but presentation is still mostly dominated by one presenter</td>
</tr>
<tr>
<td>5</td>
<td>Offers up information freely, interacts with peers, is engaged and attentive</td>
<td>Answers all questions on the worksheet in complete, comprehensive sentences</td>
<td>Includes all necessary information, speaks clearly to the class, divides presentation time up evenly between presenters</td>
</tr>
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Self Evaluation

Teacher Evaluation

| Total ___/15 |

(Resource #6)