People & Ecosystems: A Mutual Dependency

Brooklynn Dodd | 5th Grade

Unit Description

This unit focuses on renewable and nonrenewable resources in Delaware's ecosystems as well as renewable and nonrenewable resources in the Amazon. Students will build background knowledge on ecosystems, food webs, energy chains, and culture. They will then use that background knowledge to analyze content, compare and contrast information, and conduct their own research on the Amazon and its people/culture while simultaneously reflecting on their selves and their culture. This unit is structured to offer teachers the chance to differentiate instruction and provides opportunities for student-centered learning. By the end of this unit, students should not only be able to recall information on both locations' ecosystems, but should have developed a holistic perspective that analyzes the interaction and reliance between humans and their resources and the importance of conservation.

Content Standards

Science

1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. (**5-LS2-1**)
2. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. (**5-ESS3-1**)

Social Studies (Delaware)

1. Students will apply a knowledge of topography, climate, soils, and vegetation of Delaware and the United States to understand how human society alters, and is affected by, the physical environment. (**Anchor Standards 1 & 2 - 4-5a**)

Objectives and Outcomes

Students will be able to:

1. Identify important renewable and non-renewable resources in Delaware and in the Amazon.
2. Explain how the presence and absence of natural resources affect the ecosystem.
3. Apply knowledge of resources to compare and contrast Delaware and the Amazon.
4. Identify their personal self-identity and culture and explain how it is impacted by their environment and resources.

Supporting Material

1. **DTI 2022 Unit**

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Introduction and Rationale

Cedar Lane Elementary school is one of eight elementary schools in the Appoquinimink School District. The Appoquinimink School District is a public school district in rural, Northern Delaware. Students at Cedar Lane Elementary come from diverse backgrounds. Cedar Lane is home to several different unique learning programs such as "Skill Builders," a program for elementary-aged students with behavioral disorders, and "Rise", a program for students with autism. The students that participate in these programs are typically immersed in an inclusion classroom for science and social studies, as long as it is the least restrictive environment for that student and subject. Most teachers at Cedar Lane are dual certified and are therefore required to differentiate instruction in order to meet the needs of all of their students. Teachers are often required to modify curriculum or expand curriculum on a daily basis. One of my goals for this unit is for it to be easily adjusted to meet all the needs of grade five students and teachers.

A typical fifth grade inclusion classroom at Cedar Lane consists of twenty-two to twenty-six students, around a third of which are identified as students requiring special education services, English as a second language services, or other services which require specialized instruction or pull-out services. To make this unit flexible, yet still maintain rigor and meet the needs of all students, this unit should be taught using a student centered approach to learning. In teaching this unit using a student-centered approach, as the teacher my objective is to facilitate conversations and prompt students to let their curiosity lead them. Students will be working as a whole class, in groups, and on their own throughout this unit, allowing me to gauge their progress and understanding of their findings as they conduct research and make connections to the real world.

As a fifth grade teacher at Cedar Lane, I teach both ELA (reading and writing) and science. This unit offers teachers the opportunity to teach using a cross-curricular approach, meeting both Common Core State Standards and Next Generation Science Standards. It covers English language arts skills such as conducting research and summarizing that research in written form, and science skills such as identifying parts of an ecosystem and how they interact with one another. Students are exposed to these skills throughout the year as a part of our established curriculum, and this unit will give them the opportunity to expand on what they already know and start to make meaningful

connections.

This unit is designed to tie together what students already know about ecosystems and resources, based on their experience with the current Stemscopes curriculum and knowledge of conducting research, with real-world connections to their personal lives and the lives of Amazonian Peoples. The unit will be taught during the fifth grade ELA block as well as their science block so that they are being exposed to, and interacting with the material in different ways, yet making connections across the two curriculum areas.

This unit will be introduced to the students over a period of one week before the instruction will begin. Each day students will enter their classroom and have less space and materials to work with. Each day I will facilitate a class discussion and the students will be given the chance to make observations and ask wondering questions. Once this "hook" week is finished, students will begin the unit focusing first on access to vocabulary related to the unit and understanding the difference between renewable and nonrenewable resources. Next, students will start to focus on their personal situation and identify what local resources and materials they need for not only their survival but to stay themselves. I will facilitate a social emotional learning conversation about culture and what makes them unique/how they identify themselves. This aspect of the lesson is crucial for students' later understanding of Amazonian peoples and how they are being affected.

The second half of the unit will focus on the resources and materials in the Amazon rainforest and how Amazonian peoples depend on these resources. We will start as a class by exploring resources, renewable and nonrenewable, that Delaware and the Amazon have in common, such as sunlight, rainfall, plants, and animals. Students should have background knowledge on the water cycle as well as the food/energy chain, so these connections should come easy. By making these connections to the Amazon using the resources they are familiar with and are exposed to here in Delaware, the students will be activating their prior knowledge and therefore present readiness to dive deeper into studying a culture in the Amazon and the resources that culture uses specifically to survive and thrive. Students will then be given ample opportunity to conduct research and engage in discussions over books they read, visuals/photographs they find, documentaries they watch, etc. The focus of their study will be on a group of people that resides in the Amazon and lives off its resources; The Ese'Eja. At the end of this unit, academically, students will be able to present the similarities and differences between the use and importance of resources local to them, to the use and importance of resources in the Amazon. At the end of this unit, socially and emotionally, students will have a deeper understanding of themselves and their identity as well as of the Amazonian peoples. The end goal of this unit is to empower students with knowledge and foster their desire to learn more about what role they can play in saving our local ecosystems, as well as the

Amazon.

Content Objectives

Local and Global Ecosystems

Students should have background knowledge on ecosystems and the characteristics of an ecosystem before they enter fifth grade. Fifth grade, however, is when the curriculum focuses on ecosystems in Delaware. Students learn about Delaware's ecosystems as a part of Delaware's social studies standards. This content, in addition to the exposure they get on ecosystems as a part of fifth grade Stemscopes, should be enough to set a solid foundation for them to further their understanding of their local ecosystems as well as the ecosystems found in the Amazon.

There are six ecosystems in Delaware: city lots, forests/woodlands, tidal marsh/ wetlands, meadowland/farmland, cypress swamps, and shorelines. These ecosystems provide different types of habitats for organisms and serve different functions for the state and surrounding areas.[i]

There are at least nine ecosystems in the Amazon. These ecosystems include "rainforests, seasonal forests, deciduous forests, flooded forests, bamboo stands, palm forests, savannas, dry forests, and cloud forests." These ecosystems provide homes for a diverse biological population.[ii]

The Food Web and Energy Chain

The students should have a basic understanding of the food web and the energy chain. These concepts are similar, but not the same.

The food web consists of overlapping connections that show the consumption of organisms by other organisms. Students should understand that herbivores are organisms that consume only plants, carnivores are organisms that consume only animals, and omnivores are organisms that consume both plants and animals. Students should be familiar with interpreting a food web, knowing that the direction of the arrow shows the consumption (e.g. if the arrow is pointing from grass to a cow, that means the cow consumes the grass). Students should be able to define the apex predator as the organism in a food web that consumes other animals but is not consumed by any other organism. Students also should be able to define pretty as what gets consumed (eaten) and predator as what is doing the consuming (eating).

The energy chain simply shows how an organism gets its energy to survive and moves in one direction, starting with the sun. Students must be aware that when referring to

energy, they are not referring to what we get from an electrical outlet, but what we need to survive as organisms. Students need to know that all energy originates from the sun and is then used by plants to grow, and once organisms consume the plants, they also consume the energy. A common misconception is that the energy returns to the sun, when in fact it dies with the organisms. Students must understand that without sunlight, life on Earth would be impossible.

Renewable and Nonrenewable Resources

In addition to studying Delaware and the Amazon's ecosystems, it is important that students are able to define renewable and nonrenewable resources as well as identify them in both ecosystems. Without student understanding of the renewable and nonrenewable resources in both their ecosystem and the Amazon's, they will have a difficult time understanding the importance of resource conservation and how the loss of resources has an impact on society and culture.

Renewable and nonrenewable resources are "energy sources that human society uses to function on a daily basis." Renewable sources are sources that are able to replenish themselves whereas nonrenewable resources are sources that once they are used, they are gone.[iii]

Delaware's non-renewable resources include fish, wildlife, trees, etc. One of the most important resources that is non-renewable in Delaware is soil. Farmers grow soybeans, corn, potatoes and peas in Delaware's rich soil. Important renewable resources in Delaware are solar energy, wind energy, and biomass technology.[iv] Other important renewable resources in Delaware include water and oxygen. Students should be able to identify the importance of these resources using what they have learned about the water cycle and the food/energy chain. Students should be able to explain how a food or energy chain is impacted by depletion of a species or overpopulation of a species. They should be able to recall how trees impact our environment (store carbon dioxide, release oxygen, provide shelter for wildlife, etc.) They should be able to identify sunlight as the origin of all life and energy. Finally, they should be able to explain the importance of rainfall and how it contributes to life in an ecosystem as a basic need for plants and animals.

Important renewable resources in the Amazon are oxygen and fresh water. While there is a variety of plants and animals in the Amazon compared to Delaware, they are still nonrenewable resources.[v] These resources are the same resources that are important to life in Delaware and by identifying and discussing that similarity, students should be able to start making connections of global resources. To protect these resources, there must be limitations in place. To help the students make connections about protecting these resources, the class should discuss limitations they are familiar with such as hunting

seasons or quotas.

Plants and Animals in Delaware

There are a variety of plants and animals in Delaware that are important to our ecosystems, however we want to focus on those that students can easily compare to plants and animals in the Amazon.

Two major plants in Delaware that impact our ecosystem and community are corn and beach grass. Corn is the top crop planted in Delaware by farmers, who ultimately lead Delaware's economy. There are two different types of corn planted in Delaware that serve two purposes. The first type of corn is sweet corn, used as a vegetable. The second type is field corn that is used to feed animals. Beach grass is crucial to Delaware's ecosystem because it gives stability to our coastal dunes and prevents erosion.

An animal that is prevalent in Delaware is the white-tailed deer. According to Delaware Fish and Wildlife, "White tailed deer are the one of the most important wildlife species managed in Delaware."[vi] Though important to our ecosystem, white-tailed deer can damage crops and property and there is a need to manage their population. These deer are commonly hunted by Delaware sportsmen and used for food throughout the year.

Plants and Animals in the Amazon

Corn is one of many crops planted in the Amazon rainforest. Along with corn, Amazonians, specifically the Ese'Eja plant yucca, rice, melons, beans, sugarcane, pumpkin, and citrus fruit. Also similar to Delaware's crops, these crops serve more than one purpose, the people of the Ese'Eja using the crops for food and to feed their animals.[vii]

Similar to the white-tailed deer in Delaware is the Red Brocket Deer in the Amazon. Red brockets are crucial to the Amazonian ecosystem because they graze on, and spread seed. Without the help of these deer, some plants may become endangered or extinct. These deer also are the main prey for jaguars and pumas, an important part of the Amazonian food web. Another commonality these deer share with the white-tailed deer is that they provide the Amazonians with food, but can be destructive to crops.[viii]

Self-Identity and Culture

A student's ability to self-identify and discuss their culture as well as others' cultures is a major component of the social emotional component of this unit. This objective stems from social emotional learning standards and is not tied to the academic success of a student. However, without mastery of this objective, students will find it difficult to

realize, and empathize with, the impact of loss of resources in their local ecosystem, as well as in the Amazon.

Before teaching self-identity and cultural awareness, one must understand themselves who they are and what they know about culture. Some teachers are more versed in this recognition than others, but anyone can take steps to educate themselves. The first step one should take individually, and with students is to create a working definition of the word culture. Before reading and researching, it is important to recognize what one already believes about culture, this helps identify personal beliefs, experiences, and biases. Next, address and teach the three levels of culture: surface, shallow, and deep. Take time after learning about each level to address one's own culture and the culture of your students. Breaking it down will help students first start to address their basic wants and needs and will allow them to start to think deeper about what makes them, them. The first level of culture, surface culture, is "made up of observable and concrete elements of culture such as food, dress, music, and holidays." Students should be able to easily identify these components of their own culture and recognize these components of other cultures. The next level of culture, shallow culture, consists of the norms that exist in different cultures. This level of culture may be a little more difficult for students to understand, identify, or recognize because norms are not tangible and are often unspoken. It is important for students to understand that recognition of this level of culture is important to earning respect, and ignorance of the norms in a culture may lead to tension or lack of trust. Finally, the third level of culture, deep culture, is made up of beliefs regarding things that are "good" or "bad".[ix] This level of culture focuses on ethics which may be difficult for fifth graders to grasp considering they are still learning who they are and what they believe in themselves.

The next component of this content objective is for students to be able to use their self-awareness and recognition of culture to empathize with the people of the Amazon. In this case, students must know what empathy is. A common misconception made by students at the fifth grade level is that empathy is feeling bad for someone (sympathy). We must teach them to recognize that empathy is the ability to relate to someone and what they are going through. Empathy is the ability to understand another's emotions from that person's perspective. One can teach students how to empathize with others by teaching them three simple steps. The first step to teach students how to be empathetic is to get them to think of the situation from the person's perspective (put themselves in the person's shoes). The next step is to teach them how to "share" that person's feelings, for example, "I understand you are feeling sad." Finally, students should be taught that to be completely empathetic, they need to have the desire to help better that person's situation. Before having students apply these skills when learning about the Amazonian peoples, have them apply the skills to problems and people they can relate to. Students must feel comfortable with the process before trying to apply it on such a large scale.[x]

Teaching Strategies

Because this unit is drawing from instruction provided to students in previous grades, students' background knowledge, and instruction already provided to students in grade five, my approach to teaching the unit is mainly student-centered. Using the student-centered approach, students contribute to three main parts of their learning: the why, the what, and the how. Students' participation in these components makes for an engaging, meaningful experience that all parties benefit from. Throughout the learning, students will also collaborate using different Kagan strategies such as Round Robin, Timed Pair Share, and Stand Up, Hand Up, Pair Up.

Student-Centered Approach

In the student-centered approach to learning, students get a say in the decision making process part of the unit. This approach helps students take ownership of their own learning and become more involved. There are three important aspects that students help decide on: the why, the what, and the how.

The "why" is why students need to learn this information. Obviously the unit is tied to curriculum standards and must be taught, but allowing students the freedom to decide how they can apply it to their lives, or the relevance it has to their lives, allows them to make connections. The culminating project of this unit allows students to choose between two real-world applications, one involving the Amazon, and one involving Delaware, their home.

The "what" is the content the unit focuses on. The big idea of the unit has been decided and set for the students, but the students will get to make everyday choices about what they are focusing on. For example, students may have to learn about the ecosystems of Delaware, but can do so by choosing one to study and then sharing out what they learned with their classmates that chose a different ecosystem. This independent study followed by a group share can be conducted through peer review activities such as fishbowl discussions or gallery walks. After students are confident in their understanding of their chosen ecosystem, they should document their learning via paper, multimedia presentation, or artwork.

The "how" is the different methods the students will use to demonstrate their understanding. The unit will incorporate formatives and a summative project that are open to interpretation and allow students to show their understanding verbally, physically, or in an artistic manner.[xi]

Kagan Strategies

The use of Kagan strategies allows for movement and collaboration in the classroom among groups of students, partnerships, and the whole class. These strategies include Round Robin, Timed Pair Share, and Stand Up, Hand Up, Pair Up. It is important to incorporate these collaboration strategies so that students have a chance to vocalize their thoughts and demonstrate their level of understanding. These strategies also help facilitate student discourse where students are able to engage with and learn from each other. Before using these strategies, one must must make sure the classroom routines and expectations are set and that students have the opportunity to practice these activities before they are expected to do them accurately and efficiently.

Round Robin is a strategy that involves a small group of students that take turns responding verbally to a prompt. Each student is encouraged to share with the group and is prompted by other students if they are struggling to develop a response. The goal of this strategy is to get all students to participate, the higher-level students should be acting in the role of a "coach" and the lower-level students should be using the coaching of the other students to eventually come to a correct answer or response.

Timed Pair Share is a strategy that pairs students and encourages sharing responses to a prompt for a set amount of time. One partners job is to share, and the others is to listen until the time is up and then the students are to switch. The purpose of Timed Pair Share is for students to quick recall and relay information to their partners verbally. Students must share for a certain amount of time, so they are challenged to demonstrate any and all understanding of the topic. It is crucial that each partner has their timed turn and that the other partner is actively listening if it is not their turn to share.

Stand Up, Hand Up, Pair Up is a strategy that encourages students to find their own partners and share responses to a prompt. Once both students are done sharing, they each move on to another student. This continues for a set amount of time. Stand up, hand up, pair up is useful when students are recalling or discussing prompts with brief responses or answers. In this activity, students are exposed to multiple perspectives of different students on different levels of learning.[xii]

Classroom Activities

Hook/Introduction

A journal will be distributed to each student on day one of week one. This journal will be similar to that of one that a true scientist would carry with them through the Amazon to record observations. The students should take ownership of this journal and choose what they want it to look like, and with what writing utensil they will use to take their notes. A whole group discussion will allow the students to brainstorm ways they can use this

journal to make observations. Students, with the assistance of the teacher, will come up with a list of ways to record observations (bullet lists, visuals, summaries, etc.) Once students are exposed to the different ways to record observations, they will practice using the strategies with pictures they can relate to. The next day students will walk into class and some of their resources will be missing (less desks, less books, less pencils, etc.) Students will make observations about what they notice in their classroom environment. This will continue each day for the rest of the week.

Formatives

At the beginning of the unit, students will be given a social emotional learning lesson on empathy and self-identity. Students will be evaluated on their ability to define these two terms and apply them to scenarios given to them. These formatives will be a brief check for understanding of the students' abilities to recognize and connect to these terms.

The second formative that will be collected is the students' journals after their initial week of observations. There are two expectations for the journal for each day; the first expectation is that the students make some type of observation related to their classroom environment each day and the second expectation is that the students answer a reflective question daily that prompts them to identify who they are as a person.

The third formative that will be collected will be collected at the conclusion of week two and will evaluate the students' ability to define an ecosystem and describe features of Delaware's ecosystems, as well as the Amazon's ecosystems.

The fourth and final formative will be collected at the end of week four, before the culminating week of this unit. Students will be asked to define what renewable and nonrenewable resources are, as well as recall information about the renewable and nonrenewable resources in Delaware and the Amazon. It is important that students are able to explain the difference between renewable and nonrenewable resources and identify them so that they have background knowledge before they start their culminating project (summative).

Summative

For the culminating project of this unit, the students will conduct research on a nonrenewable resource in Delaware and a nonrenewable resource in the Amazon. They will identify how these resources impact their ecosystem, how humans in the ecosystem interact with the resources, and what would happen if the resources went extinct. The students will use this information to compare and contrast the two chosen resources. Because this unit will be taught in an inclusion classroom, the project will be differentiated and leveled based on ability. Students who have demonstrated excellent

understanding (according to the formatives) and need to extend their thinking will be given the opportunity to choose any nonrenewable resource from each ecosystem. Students who demonstrate satisfactory understanding according to the formatives will be able to choose from pre-selected nonrenewable resources from each ecosystem. Students who have demonstrated inconsistent understanding will use the nonrenewable resources discussed during the whole group lesson (white tailed deer and red brocket deer, or corn and an Amazonian crop) and research them more in depth to complete their project. This project may be completed in the form of a research report, multimedia presentation, or visual display. To evaluate students' learning in the social emotional sense, the final portion of this project will be for students to role play, or create a scenario, in which the resource from the Amazon they chose, was depleted. They should creatively demonstrate the impact of extinction of a resource on the Amazonian people and their culture.

Bibliography

"The Amazon Biome." Amazon Aid Foundation, August 14, 2020. https://amazonaid.org/resources/about-the-amazon/the-amazon-biome/.

This text discussed the different ecosystems in the Amazon and the characteristics of them. It also explains why each ecosystem is important to the Amazon.

Clowes, Gavin. "The Essential 5: A Starting Point for Kagan Cooperative Learning." Kagan's FREE Articles - Research & Rationale - Research proves effectiveness of Kagan Structures., 2011. https://www.kaganonline.com/free_articles/research_and_rationale/330/The Essential-5-A-Starting-Point-for-Kagan-Cooperative-Learning.

This article introduces different Kagan strategies, which are engaging strategies to use in the classroom that promote student discourse. Kagan strategies can be used to recall or share information among students.

"Delaware's White-Tailed Deer." DNREC Alpha, April 9, 2021. https://dnrec.alpha.delaware.gov/fish-wildlife/hunting/white-tailed-deer/.

This article, written by Delaware Department of Natural Resources and Environmental Control, gives background information on the white-tailed deer and its significance in Delaware's ecosystem.

"Ecosystems - Delaware Department of Education." Accessed November 15, 2021. https://www.doe.k12.de.us/cms/lib/DE01922744/Centricity/domain/66/grade%205/Ecosystems.docx.

This PDF was pulled from Delaware Department of Education as resources used in the fifth grade social studies curriculum. The resources include articles that give information on the six Delaware ecosystems and activities an educator could use to practice identifying the six ecosystems.

"English Language Arts Standards " Reading: Informational Text " Grade 5." English Language Arts Standards " Reading: Informational Text " Grade 5 | Common Core State Standards Initiative. Accessed December 12, 2021. http://www.corestandards.org/ELA-Literacy/RI/5/.

This website provides a list and comprehensive summary of Delaware's Common Core State Standards. This is where the ELA standards addressed in this unit were retrieved from.

Hammond, Zaretta. *Culturally Responsive Teaching and the Brain: Promoting Authentic Engagement and Rigor among Culturally and Linguistically Diverse Students*. Thousand Oaks, CA: Corwin, 2015.

Zaretta Hammond wrote this book to explain culturally responsive teaching practices. She gives background information on the subject, as well as steps and suggestions for educators looking to practice culturally responsive teaching.

"How to Teach Empathy to Students in the Internet Era." How to teach empathy to students in the internet era?, March 1, 2021. https://www.positiveaction.net/blog/how-to-teach-empathy-to-students.

This article is important to the social and emotional learning aspect of this unit. The article discusses the definition of empathy, how to teach empathy to students, common misconceptions of empathy, and why empathy is an important skill for students to learn.

Kiffel-Alcheh, Jamie. "Delaware Pictures and Facts." Geography. National Geographic Kids, February 16, 2021. https://kids.nationalgeographic.com/geography/states/article/delaware.

This article from National Geographic gives pictures and facts about Delaware, including information on Delaware's renewable and nonrenewable resources.

Kossel, Kyle. "Mazama Americana (Red Brocket)." Animal Diversity Web. Accessed November 15, 2021. https://animaldiversity.org/accounts/Mazama_americana/#7F400F00-F483-4BF7-9C88-E5F285370BEC.

The focus of this article was on the Red Brocket deer and its importance to the ecosystems in the Amazon. This article was used to gather similar information that was found on the white tailed deer in Delaware.

Martínez Rocío, Jon Cox, and Roger Mustalish. *Ancestral Lands of the Ese'eja: The True People*. West Chester, PA: Amazon Center for Environmental Education and Research (ACEER), 2017.

This book, written in conjunction with the people of Ese'Eja, describes their culture and beliefs using stories, pictures, and interviews. The book is a well-rounded collection of information about the Ese'Eja's history and culture. This book was important when looking for human impact and interaction with the Amazon rainforest.

McCarthy, John. "Student-Centered Learning: It Starts with the Teacher." Edutopia. George Lucas Educational Foundation, September 9, 2015. https://www.edutopia.org/blog/student-centered-learning-starts-with-teacher-john mccarthy.

This article explains student-centered learning and the benefits of implementing student-centered learning into one's teaching practices. This article is important to understand how this unit may be differentiated to meet students' unique needs.

National Geographic Society. "Nonrenewable Resources." National Geographic Society, September 5, 2019. https://www.nationalgeographic.org/encyclopedia/nonrenewable-resources/.

This article gives information on the definition of nonrenewable resources and gives examples of common nonrenewable resources in the world. This article was best used to explain the definition of a nonrenewable resource.

"Read the Standards." Read the Standards | Next Generation Science Standards. Accessed December 12, 2021. https://www.nextgenscience.org/search standards? keys=&tid_4%5B%5D=All&tid_1%5B%5D=All&tid_2%5B%5D=All& tid%5B%5D=105.

This website provides a list and comprehensive summary of Next Generation Science Standards. This is where the science standards addressed in this unit were retrieved from.

"Social Studies / Standards for Social Studies." / Standards for. Accessed December 12,

2021. https://www.doe.k12.de.us/Page/2548.

This website provides a list and comprehensive summary of Delaware's Social Studies Standards. This is where the social studies standards addressed in this unit were retrieved from.

Somma, Marina. "What Are the Resources of the Amazon Rainforest?" Sciencing, September 30, 2021. https://sciencing.com/resources-amazon-rainforest 7214334.html.

Marina Somma's article gives a synopsis of the resources in the Amazon Rainforest, both renewable and nonrenewable. The basic information contained in this article is important to one's understanding of the important resources in the Amazon.

Appendix: Implementing District Standards

This unit was designed using a cross curricular approach and addresses Delaware state standards in English Language Arts, Science, and Social Studies. Students' primary focus is the identification of local and global resources in an ecosystem and how those resources interact in a food web or energy chain. This focus addresses NGSS (Next Generation Science Standards) standard "5-LS2-1 - Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment." Once students have developed their understanding of the movement of matter among an ecosystem, they then focus on human impact and interactions with the environment, meeting NGSS standard 5-ESS3-1, "Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment."[xiii]

The study of Delaware's environment and ecosystems also meets Delaware Social Studies Anchor Standards one and two, "4-5a - Students will apply a knowledge of topography, climate, soils, and vegetation of Delaware and the United States to understand how human society alters, and is affected by, the physical environment." and "4-5a - Students will understand the reasons for the locations of human activities and settlements and the routes connecting them in Delaware and in the United States."[xiv]

In the students' culminating activity, students will conduct their own research comparing and contrasting both a renewable and nonrenewable resource in the Amazon to a renewable and nonrenewable source in Delaware, and develop a report of their findings. In doing this, they will be gathering information from several sources, meeting CCSS (Common Core State Standards) standard RI.5.9, "Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably." They will combine the information they gather and develop a comprehensive report, meeting

CCSS standard W.5.7, “Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.”[xv]

Attachments

1. Synopsis
2. Learning Focused Map

Notes

[i]“Ecosystems - Delaware Department of Education.” Accessed November 15, 2021. https://www.doe.k12.de.us/cms/lib/DE01922744/Centricity/domain/66/grade%205/Ecosystems.docx.

[ii] “The Amazon Biome.” Amazon Aid Foundation, August 14, 2020. https://amazonaid.org/resources/about-the-amazon/the-amazon-biome/.

[iii] National Geographic Society. “Nonrenewable Resources.” National Geographic Society, September 5, 2019. https://www.nationalgeographic.org/encyclopedia/nonrenewable-resources/.

[iv] Kiffel-Alcheh, Jamie. “Delaware Pictures and Facts.” Geography. National Geographic Kids, February 16, 2021. https://kids.nationalgeographic.com/geography/states/article/delaware.

[v] Somma, Marina. “What Are the Resources of the Amazon Rainforest?” Sciencing, September 30, 2021. https://sciencing.com/resources-amazon-rainforest-7214334.html.

[vi] “Delaware's White-Tailed Deer.” DNREC Alpha, April 9, 2021. https://dnrec.alpha.delaware.gov/fish-wildlife/hunting/white-tailed-deer/.

[vii] Martínez Rocío, Jon Cox, and Roger Mustalish. *Ancestral Lands of the Ese'eja: The True People*. West Chester, PA: Amazon Center for Environmental Education and Research (ACEER), 2017.

[viii] Kossel, Kyle. “Mazama Americana (Red Brocket).” Animal Diversity Web. Accessed November 15, 2021. https://animaldiversity.org/accounts/Mazama_americana/#7F400F00-F483-4BF7-9C88-E5F285370BEC.

[ix] Hammond, Zaretta. *Culturally Responsive Teaching and the Brain: Promoting*

Authentic Engagement and Rigor among Culturally and Linguistically Diverse Students. Thousand Oaks, CA: Corwin, 2015.

[x] "How to Teach Empathy to Students in the Internet Era." How to teach empathy to students in the internet era?, March 1, 2021. https://www.positiveaction.net/blog/how-to teach-empathy-to-students.

[xi] McCarthy, John. "Student-Centered Learning: It Starts with the Teacher." Edutopia. George Lucas Educational Foundation, September 9, 2015.

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