

Wiggly, Squiggly Earthworms: An Investigative Look into Earth's Essential Creatures



"It may be doubted whether there are many other animals which have played so important a part in the history of the world as have these lowly, organized creatures." - Charles Darwin

Curriculum Design Plan by Meghan Brennan

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Weebly site

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Dear CCES/SEMIS,

I am Meghan Brennan, an undergraduate student at Eastern Michigan University. I am currently working towards a Bachelor's of Science in Elementary Education with a concentration in both Integrated Science and English Language Arts. I will be student teaching during the winter 2014 semester in a first grade classroom in Livonia, MI. I believe that each child deserves an education that is rich, stimulating and provokes critical thinking in order to visualize solutions. I want my students to leave my classroom with a greater understanding of how they fit into the larger world so that they can understand their rights and responsibilities. I believe that education should be hands-on and inquiry based because this allows for more powerful connections to occur so that learning is impactful and engaging. I also believe in the power of place-based education as it allows for students to make connections and feel empowered within their community.

This unit seeks to explore the importance of worms and composting to the immediate community and to the Earth. It was designed for a first grade classroom. My unit fosters critical-thinking by challenging students to consider what the world would be like if worms no longer existed. Throughout this unit, students will engage in discussions and activities that introduce them to the earthworm. We will look at how the needs of earthworms compare and contrast to the needs of humans. We will investigate where earthworms live, looking at the conditions that are ideal to worms. This investigation will lead into the creation of a compost pile that will hopefully work with/for a school or community garden that is already in place. This unit was designed to be literature-rich, using both fiction and non-fiction texts, because first grade is a time of literature infusion. I have designed the unit to be interdisciplinary because younger students are more adept to remember and make connections to material that is presented as a whole and not compartmentalized.

The goals and objectives of this unit align with the mission of your organization for this unit was created from an ecojustice perspective with an emphasis on being place-based. My main goal for this unit was to instill in students a sense of interdependence and stewardship that would ultimately be felt towards all creatures of the Earth. This unit was designed so that it could be incorporated by any school interested in using the curriculum. Ideally, the unit would work well in a classroom that already has access to a school or nearby community garden; however, it is possible that this unit could inspire the creation of a garden if one does not yet already exist.

Respectfully,

Disciplinary and Interdisciplinary Content Analysis

I believe that powerful social studies is all about teaching students how to have a voice. If we teach students how to utilize their voices, then we are effectively teaching them about how to be a good citizen of the world. Without a voice, how can we expect our students to make full use of the rest of the knowledge that we teach them? In order to be a productive, responsible, and active member of this global community, our students need to know how to analyze information given to them, formulate an opinion about that information, and then take action based on that opinion. I think too often social studies education stops after teaching students how to formulate an opinion, which is usually only taught in the form of debates or writing very specific pieces. It's not good teaching practice to teach students to care passionately about a subject or topic and then to not equip them with the skills to use that passion to shake things up! This world desperately needs movers and shakers.

Powerful social studies instruction for the younger elementary grades may look different from an outside perspective, but I firmly believe that young students should also be taught to have a voice. Think of how many activists we could have if children were taught at a young age to use their voice for a purpose rather than being told to silence it. I was really inspired by Mary Cowhey's book *Blank Ants and Buddhists* and how in it, she described an effective approach to engage young students in their community. Cowhey also demonstrated that young students are capable of having authentic discussions about very deep topics, such as war, voting rights, life, and death. They only need to be asked the right questions, along with a little scaffolding in order to introduce the appropriate information.

This unit seeks to combine and weave content across multiple areas of the standard first grade curriculum because younger students are more adept to remember and make connections to material that is presented as a whole and not compartmentalized. The lessons were designed to be literature-rich, using both fiction and non-fiction texts, because first grade is

a time of literary infusion. I chose to focus my lesson plans on the connections between social studies, science, and English language arts; however, I included possible math, music, and physical fitness activity extensions on my weebly site underneath Resources. Below is a sample of the standards used in this unit, taken from both the Michigan Grade Level Content Expectations (GLCE's) and the Common Core State Standards (CCSS).

Social Studies GLCE's

I chose to focus my unit around the social studies standards that looked at problems and solutions within a school community. These standards tie in very well with the concepts of ecojustice and place-based education. It was difficult to incorporate social studies into my unit topic of worms and interdependence, but after going through the exhibition, someone gave me the great idea to look at composting and waste management within the school building. This idea really reminded me of something that Mary Cowhey would do with her students, so I know it had to be a good idea. My only wish is that I was able to further develop this unit so that I could better explain the connections between worms, composting, and the school community.

- 1 – C5.0.2 Identify situations in which people act as good citizens in the school community (e.g., thoughtful and effective participation in the school decisions, respect for the rights of others, respect for rule of law, voting, volunteering, compassion, courage, honesty).
- 1 – G1.0.1 Construct simple maps of the classroom to demonstrate aerial perspective.
- 1 – G2.0.1 Distinguish between physical (e.g., clouds, trees, weather) and human (e.g., buildings, playgrounds, sidewalks) characteristics of places.
- 1 – P3.1.1 Identify public issues in the school community.
- 1 – P3.1.2 Use graphic data to analyze information about a public issue in the school community.
- 1 – P3.1.3 Identify alternative resolutions to a public issue in the school community.

Science GLCE's

One of the dominant topics in the first grade science curriculum is learning about the needs of animals. This particular theme is where the idea for unit came from. I wanted to explore the

wonderful idea that animals have needs just like humans do because it is a great way to introduce the ecojustice concept of interconnectedness. All the inhabitants of the Earth need water, food, and air to survive and we are connected through the resources that we share. I also wanted to make use of the inquiry and application standards found in the science GLCE's.

- L.OL.01.13 Identify the needs of animals.
- S.IP.01.11 Make purposeful observation of the natural world using the appropriate senses.
- S.IP.01.12 Generate questions based on observations.
- S.IP.01.13 Plan and conduct simple investigations.
- S.IP.01.16 Construct simple charts from data and observations.
- S.IA.01.13 Communicate and present findings of observations.
- S.IA.01.14 Develop strategies for information gathering (ask an expert, use a book, make observations, conduct simple investigations, and watch a video).

English Language Arts CCSS

I chose to focus my ELA instruction on the Common Core standards rather than the Michigan GLCE's because they (CCSS) are more geared towards critical-thinking, real application, and authentic dialogue. If I were to further expand this unit (writing out more lessons), I would incorporate more writing and reading standards that I have listed here.

- CCSS.ELA-Literacy.SL.1.1 Participate in collaborative conversations with diverse partners about *grade 1 topics and texts* with peers and adults in small and larger groups.
- CCSS.ELA-Literacy.SL.1.1a Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion).
- CCSS.ELA-Literacy.SL.1.1b Build on others' talk in conversations by responding to the comments of others through multiple exchanges.
- CCSS.ELA-Literacy.SL.1.1c Ask questions to clear up any confusion about the topics and texts under discussion.
- CCSS.ELA-Literacy.L.1.6 Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using frequently occurring conjunctions to signal simple relationships (e.g., *because*)
- CCSS.ELA-Literacy.W.1.3 Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure.

EcoJustice Content Analysis in Developmental Context

This unit was designed to be inquiry and project-based. I have created these essential questions in order to guide the development of the curriculum. A goal for the unit was to have the students critically and thoughtfully consider how humans view and relate to the smallest of creatures. I wanted my students to engage in discussions related to this topic that were both meaningful and developmentally appropriate; therefore, I needed powerful questions to guide the planning of my unit. By investigating the (below) essential questions, my students will gain a better understanding of these ecojustice concepts: stewardship, interconnectedness, and happiness.

- What is our responsibility to other living creatures?
- How do the needs of earthworms compare to the needs of humans?
- Why are earthworms important to the Earth? What would happen to the Earth if earthworms disappeared?
- How can we be good citizens in our school community?

This unit emphasizes the ecojustice concept of stewardship in that we all have a responsibility to protect and care for the living creatures of this Earth. Over the course of this unit, we will engage in an inquiry-based project to compile a compost pile for the school or community garden. Students will develop a sense of stewardship to the worms and compost pile in order to keep it healthy and the worms happy. Students will also understand how they are stewards within their school community, and that their actions should promote good citizenship. Stewardship is an important concept to social studies because all humans play a part in taking care of the Earth. When learning about history, economics, and geography, it is vital to discuss the role of stewardship within these disciplines in order for students to understand responsibility.

This unit also explores the interconnectedness of living creatures and Earth systems, particularly how worms and humans are connected. Worms are vital to keeping the Earth

healthy, yet humans often forget just how important worms are to the health of the planet. I want my students to understand that all living things are connected and that each play a part in the web of life no matter their size. Students will begin to gain an understanding after participating in a web of life activity that I have adapted from the Creative Change Education Solutions website. Interconnectedness is an idea that I took away from the diagrams about two different ways of looking at the world that we discussed in class. A main goal of this unit is to get my students to see the world from the web-perspective and not the pyramid.

Finally, this unit looks at happiness, another ecojustice concept, from the perspective of a worm. Students will engage in authentic dialogue about what worms need to have full and satisfying lives. Students will explore how the needs of worms are not so different from the needs that humans fulfill in order to be happy themselves. Happiness is an integral part of social studies because it is ultimately the main motivator for numerous events throughout history. Patterns in movement of people can be linked to happiness. The economic concepts of needs vs. wants and costs vs. benefits can also be explained through the concept of happiness.

This unit helps students to dive in and connect to their school communities. As stated above in the social studies analysis, first grade is a time of exploration within the school community. Students learn about good and bad choices that can be made at school, and how those choices ultimately affect others in the school family. Students will work to identify a problem in the school community (large amounts of waste/trash) and then use their knowledge gained in the unit to identify a solution (advocate for a compost pile for snack and lunch time waste). During this waste exploration, students will learn from the experts in their school community, such as the custodian, lunch room workers, and principle.