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Global Efficacy

Prescott College

Methods Integration: Theory into Practice

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Comprehensive Integrated Unit of Study Science, Mathematics, and Reading

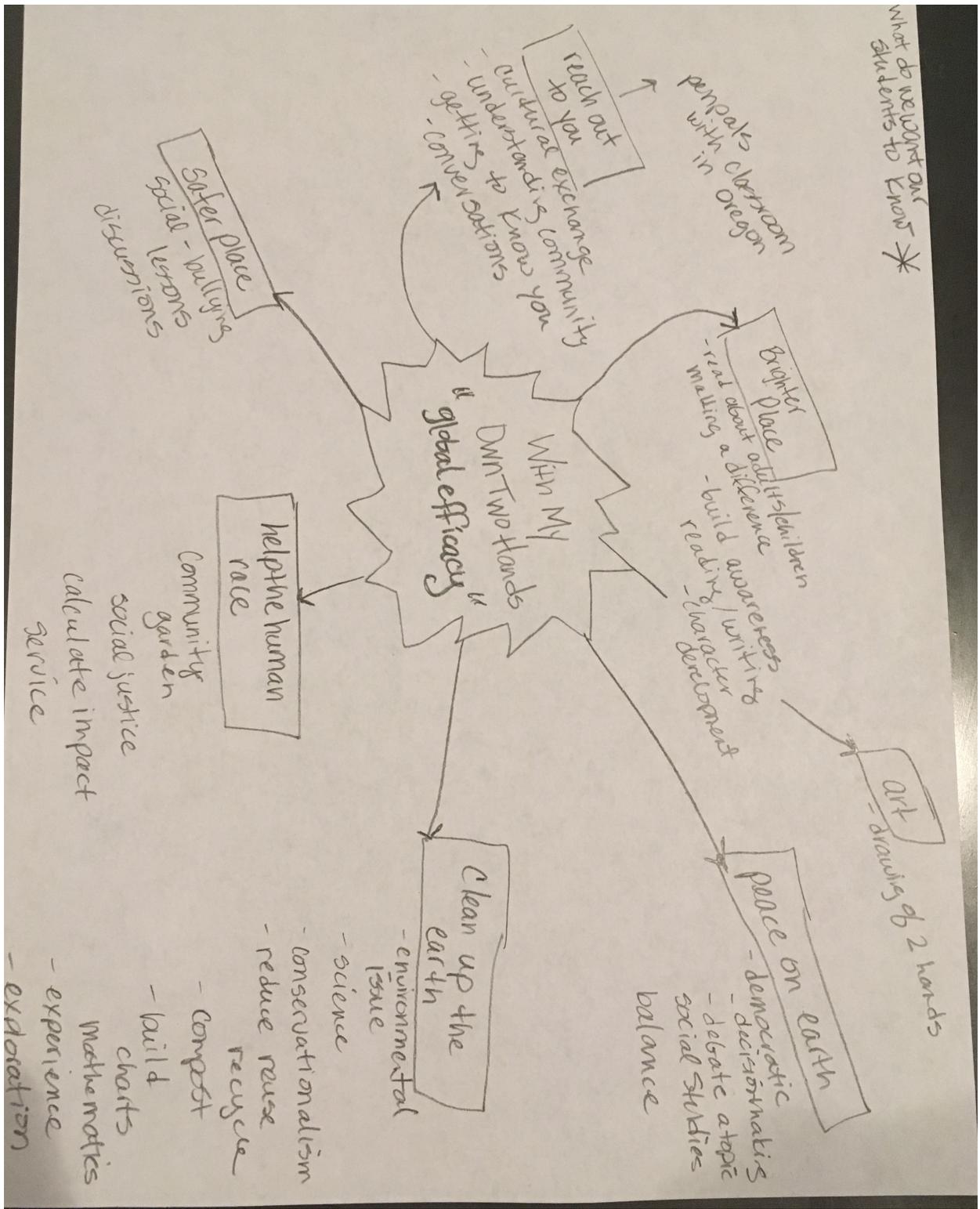
Unit of Study Overview:

The Unit of Study titled Global Efficacy is a comprehensive unit integrating 3 disciplines including science, mathematics, and reading. This unit of study has been created for kindergarten and can be easily tailored and adjusted for first grade level students. During this unit on Global Efficacy students will focus on cleaning up the earth and examining how humans impact the environment. Students will begin to develop a solid understanding of how reducing our human impact on the environment is a social justice issue as well as an environmental necessity. Students will explore the ways to reduce, reuse, and recycle, in addition to how to compost, chart their discoveries, and create repurposed items. Ideally, this unit of study would take place during the fall or spring months, so that outdoor activities can accompany the unit.

Logical Sequence:

I was initially inspired for the unit of study on Global Efficacy from the song “My Own Two Hands” by Jack Johnson featuring Ben Harper. I believe the song speaks inspirationally to students about making our earth a brighter place, making peace on earth, cleaning up the earth, helping the human race, creating a safer place, and reaching out to one another all with our own two hands. Once these key elements were separated, it felt natural to expand each element into lessons and activities that would complement each other and raise awareness on the amazing impact we can have using our own two hands.

What do we want our students to know *



Lesson Plans Introduction:

This group of five lessons focuses on cleaning up the earth with our own two hands and more specifically understanding the human impact on our environment. I love teaching and inspiring work through the use of music and I am hoping we can carry out the use of this song and ultimately sing it during a family invited celebration in the classroom. Also, because I work with majority English Language Learners it would be a great experience to learn a portion of the song in Spanish as well as in sign language. This unit of study currently is a comprehensive unit integrating 3 disciplines, but could easily have other lessons including social studies, social emotional learning, and the arts added to the unit that would supplement the overall theme. My main wondering is how our recycled paper will come out. In short, I was most enthused and excited to build lessons that provide students the space to explore, discuss, and discover together.

Lesson Plan Template

Unit title or subject: Integrated Science, Reading, and Mathematics		Week:
Lesson #: 1	Lesson title: Reuse & Repurpose	Allotted Time: 30 minutes
Desired Results		
<p>State Standard(s): Science Engineering Design K-2-ETS1 – 1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p> <p>English Language Arts NJLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.</p> <p>Mathematics</p>		
<p>Essential question(s): How can reusing items help our environment?</p>		
<p>Objectives: <i>(Language and Content)</i> <i>Students will (ABCD Action verb + Behavior reference + Condition + Degree)</i> Working with the whole class, students will discuss logical inferences and relevant connections to a text, using at least 1 piece of evidence from the text.</p>		
<p>Materials Needed: Computers, link to book set up on google classroom, lots of scrapes, paper, and bags - repurposed items for students to review – 30 pieced of blank paper – bucket – science notebooks</p>		
Formative and Summative Assessment Evidence		
<p>Performance Tasks: <i>(include differentiation)</i> Students will work together to develop logical connections to the text using evidence from the text. Students will create a new item using reusable items. Students will write/draw something that they feel they may be doing that could hurt the environment.</p>	<p>Other Evidence: Students gather information through reading and observing images to begin to understand the negative impact garbage can have on our environment. Students will make connections on how to reuse items.</p>	

Learning Plan

Process:

ANTICIPATORY SET

Take out your computer and headphones and open up Google Classroom – I want you to click on the link under today’s date – We are going to be following along to the reading of “One Plastic Bag Isatou Ceesay and the Recycling Women of Gambia” by Miranda Paul.

INPUT

Class Discussion - What happened in the story? In the beginning, middle, and end? Where were they throwing away the plastic bags? Why? What happened after they kept on doing that? Why was it a problem? What did the women do to help clean up the land? How did they help the animals?

Students will need to put away computers.

MODEL

Show students some example of reused items. Necklaces, bags, crafts.

Students are now going to reuse items that would have been thrown away, similar to the bags in the story in Gambia, and reuse and repurpose scrapes to create something new.

Students now will receive a bin of scrapes, bags, and other reusable materials. Students will be able to make their own necklace, bag, pencil holder, or any other craft they design.

Students will practice reusing items that do not need to be thrown away.

INDEPENDENT PRACTICE

Now that you have finished, I want you to take out a piece of paper and write down a bad habit that maybe you do or someone that you know may do that is harmful to the environment around you, whether the land, water, air, or a living thing.

Once finished, find a partner and share your bad habit.

Now I want you to rip up, tear up your paper, and throw the ripped-up paper into this bucket.

We are going to promise to be better and be aware of our impact on the environment.

Now I am going to pour water over our bad habits all ripped up and we are going to make our very own recycled paper tomorrow.

CHECK FOR UNDERSTANDING

Have students take out their science notebooks and draw a picture of something that they can reuse. Walk around and review student work. Check for understanding of reusing and repurposing old items.

DIFFERENTIATION

Students can work in pairs. Students can add more detail to observations. More scaffolding during creating something new from scrapes. If computer is too much, students can read the book, or another student can read to a partner.

Reflection:

Mini-Lesson on how to operate Google Classroom must proceed lesson. This lesson incorporates a lot of exploration, hands on, and interactive tasks, built with a constructivism mindset based on Piaget's theory. It will be interesting to see how students create a reusable craft item and what they will chose to make. I will need to create usable options that students in this age group can create on their own.

Adapted from: McTighe, J. & Wiggins, G. (2004). *Understanding by design: Professional development workbook*. Alexandria, VA: ASCD.

Lesson Plan Template

Unit title or subject: Integrated Science, Reading, and Mathematics		Week:
Lesson #: 2	Lesson title: Making Recycled Paper	Allotted Time: 30 minutes
Desired Results		
<p>State Standard(s): Science Earth and Human Activity K-ESS3-3. Communicate solutions that will reduce the impact of humans on land, water, air, and/or other living things in the local environment.</p> <p>English Language Arts</p> <p>Mathematics Measurement and Data K.MD.A. Describe and compare measurable attributes. K.MD.A.2. Directly compare two objects with a measurable attribute in common, to see which object has “more of”/ “less of” the attribute and describe the difference.</p>		
<p>Essential question(s): How does recycling impact our environment?</p>		
<p>Objectives: <i>(Language and Content)</i> <i>Students will (ABCD Action verb + Behavior reference + Condition + Degree)</i> Working with the whole class, students will compare two wire frames and recognize whether one has more or less than the other, using at least one measurable attribute.</p>		
<p>Materials Needed: 30 wire frames – bucket filled with decomposing paper mixed with water – towels – gloves for each student – computer and projector</p>		
Formative and Summative Assessment Evidence		
<p>Performance Tasks: <i>(include differentiation)</i> Students will create their own recycled paper. Students will compare two wire frames and be able to explain which has a longer side or which side of the frame is shorter.</p>	<p>Other Evidence: Students will continue to develop an understanding on human impact on the environment.</p>	

Learning Plan

Process:

ANTICIPATORY SET

Yesterday we all wrote down our bad habits and ripped them up in hopes of becoming better more aware citizens of our community and world around us.

Inform students that the ripped-up paper is going to turn into a new opportunity to make better decisions for our environment. Our bad habits are going to turn into new recycled paper.

Today we get to check in and make our recycled paper.

INPUT

Students put on gloves, and take turns passing around the bucket of paper in water. Each student gets to feel the paper decomposing and then describes what they feel and shares their thoughts.

MODEL

Write the word Decompose and Recycle on the board. What do these words mean? Can anyone give an example of thing that decomposes? What is recycling? Can someone describe why it is important to recycle paper? Where does paper come from? How does recycling impact our environment?

GUIDED PRACTICE/MODELING

Take out wire frames that will help make the recycled paper. Ask students how they can compare frames? What type of attributes can we compare? Which side is longer? Shorter? Which frame will produce the larger recycled paper?

INDEPENDENT PRACTICE

Instruct students on the steps to create the new recycled paper. Take a handful from the bucket and lay it out on their wire frame. Then press all of the water out over the towel until the paper is flat. Finally, place it by the windowsill to dry overnight and turn into our new recycled paper.

CHECK FOR UNDERSTANDING

Our principal was so excited by our class making recycled paper, so I took a ton of pictures. As a final exit slip - Look up at the photo on the projector, I want you to write down a statement about why we should recycle so I can post it to our Twitter account with pictures from today to share with our community.

DIFFERENTIATION

If students are not comfortable with touching the decomposing paper, they can say no. Students can write multiple sentences for the Twitter account. Students can be assigned a buddy to assist in drying out the paper.

Reflection:

Students will require a mini lesson on twitter, what it is, how it works, what is required when we write a caption for a phot to share with families and the community. I will need to create the wire frames beforehand. Initially will be an investment but I could imagine making recycled paper each year with students. I am actually really excited myself to be able to make it. There are some easy step by step instructions found online for a resource.

Adapted from: McTighe, J. & Wiggins, G. (2004). *Understanding by design: Professional development workbook*. Alexandria, VA: ASCD.

Lesson Plan Template

Unit title or subject: Integrated Science, Reading, and Mathematics		Week:
Lesson #: 3	Lesson title: Decompose and Chart	Allotted Time: 30 minutes
Desired Results		
<p>State Standard(s): Science Earth and Human Activity K-ESS3-3. Communicate solutions that will reduce the impact of humans on land, water, air, and/or other living things in the local environment.</p> <p>English Language Arts</p> <p>Mathematics Measurement and Data K.MD.B.3. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.</p>		
<p>Essential question(s): How long does it take an object to decompose?</p>		
<p>Objectives: <i>(Language and Content)</i> <i>Students will (ABCD Action verb + Behavior reference + Condition + Degree)</i> Working as a whole class, students will create a chart to categorize how many items will decompose, fast, slow, or not at all and be able to count the number of objects in each category, using at least 10 items.</p>		
Materials Needed:		
Formative and Summative Assessment Evidence		
<p>Performance Tasks: <i>(include differentiation)</i> Students will predict how long it will take for an object to decompose.</p>	<p>Other Evidence: Students will continue to develop an understanding on human impact on the environment.</p>	

Learning Plan

Process:

ANTICIPATORY SET

Show the list created by the students of what other things decompose. (This list will need to be create during a prior lesson).

Today we get to look at different items/objects and predict if they will decompose fast, medium, or slow.

We are going to use our investigation skills: observe, predict, and record our findings (If these key terms have never been discussed then a mini-lesson on what they mean will need to be incorporated – Maybe a pre-test on these key words can be included in the anticipatory set)

INPUT/ PRACTICE

Students will work with a partner to predict whether an object will decompose fast, slow, or not at all. Students will write their predictions with drawings in their science notebooks.

Students will have 10 minutes for exploration. Teacher will walk around and check in with each student, providing opportunity for more support for students that may require it. Asking students – How do you know? Why do you think that? Which one will decompose faster? Slower? Teacher will be writing down student observations.

MODEL

Bring students back together. What did you notice? What questions do you have?

Invite students up to discuss their thoughts on why or why not, they thought the object would decompose? Also, whether fast or slow? Why?

Why might some things decompose, and some do not? Or some may take 1,000's of years to decompose?

GUIDED PRACTICE/MODELING

Now we are going to find out the actual decomposition time and chart it by category: fast, medium, slow.

Read estimated times for certain items to decompose (down2earthmaterials.ie)
(scoopwhoop.com)

Who can count how many in each category? Which has the most? Least?

Close your eyes and think about what type of garbage you are throwing away. Which category does most of your garbage fall under?

CHECK FOR UNDERSTANDING

Take notes on student participation.

Ask students to reflect in their notebooks the object that surprised them most. Was it the plastic water bottle, the banana, the toothbrush, or another object? Why? Did it take longer to decompose or maybe shorter than you predicted?

Walk around and check in with students as they are writing.

DIFFERENTIATION

Small group can be created to work more on understanding the creation of a chart and counting. Students can work with a buddy. If a student is not comfortable talking in front of the class they do not have to, teacher can meet one-on-one.

Reflection:

A prior lesson to this one can be a lesson on the life cycle of a tree. Students can go outside and explore around school grounds, take photos, and video of different stages of the tree.

Obtaining the full understanding of tree, decomposition, and where paper comes from.

Adapted from: McTighe, J. & Wiggins, G. (2004). *Understanding by design: Professional development workbook*. Alexandria, VA: ASCD.

Lesson Plan Template

Unit title or subject: Integrated Science, Reading, and Mathematics		Week:
Lesson #: 4	Lesson title: Machine & Nature Recycling	Allotted Time: 30 minutes
Desired Results		
<p>State Standard(s):</p> <p>Science Engineering Design K-2-ETS1 – 1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p> <p>English Language Arts RL.K.1. With prompting and support, ask and answer questions about key details in a text (e.g. who, what, where, when, why, how).</p> <p>Mathematics K.MD.B.3. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count</p>		
<p>Essential question(s): How does composting affect our environment?</p>		
<p>Objectives: <i>(Language and Content)</i> <i>Students will (ABCD Action verb + Behavior reference + Condition +Degree)</i> Working as a whole class, students will discuss the who, what, where, when, why, and how of composting, using at least 2 pieces of direct evidence from a text.</p>		
<p>Materials Needed: 3 different kinds of soil, a pair of gloves for each student – book “A Green Kids Guide to Composting” by Richard Lay</p>		
Formative and Summative Assessment Evidence		
<p>Performance Tasks: <i>(include differentiation)</i> Students will collect data on how to build a composting bin.</p>	<p>Other Evidence: Students will understand how composting can positively impact the environment.</p>	

Learning Plan

Process:

ANTICIPATORY SET

Why might it be important to understand how long it takes objects and more specifically things we throw away in our garbage to decompose? Why is recycling important?

We know that we can recycle paper, glass, and other items using machinery but is there any other way?

Has anyone ever heard of composting? Nature's way of recycling.

Nature Recycling – what is it? Why is it beneficial? Who benefits? Who is affected? Who does it help?

How can we become active nature recyclers... composting?

INPUT/ PRACTICE

Students put on gloves.

Students observe 3 stages of composted soil. The first has fresh garbage of objects that are proper for composting. The second has some objects already beginning to decompose. The third is the right soil ready to be feed to plants and the garden. Students are able to touch and feel the soils. Student rotate through stations, about 5 minutes per station.

Students draw images of noticing's in their science notebook. Does it look the same? Is there any living thing in the soil to help the composting process?

MODEL

Read to the class "A Green Kids Guide to Composting" by Richard Lay

Investigate the how, why, when, what, who, where of composting. Develop a chart with Who, What, Where, When, Why, and How – call of students to fill in what they remember from the reading. Develop a detailed chart together so students have a detailed idea of all about composting.

GUIDED PRACTICE/MODELING

Have students return back to their desks. What are some benefits of composting?

What does composting have to do with garbage and landfills? Call of students to begin the conversation.

In your science notebook, write one reason why we should compost. Students can also draw a picture to explain their thinking. Teacher will walk around checking in with student understanding? Why did you choose this? How will this affect the environment? Is this something you can do at home or in school?

CHECK FOR UNDERSTANDING

Note student participation during observation and discussions about the book read in class. Review student's science notebook. Did the student write a reason to compost?

DIFFERENTIALION

Students can adjust seating during the story. Students do not have to touch soil if they have any sensory issues.

Reflection:

Active exploration in science will be a practiced skill throughout the year. Students may not be good at it from the start of the school year but continued practice of inquiry and working collaboratively to discuss and explore new things will be a developing skill throughout the year.

Adapted from: McTighe, J. & Wiggins, G. (2004). *Understanding by design: Professional development workbook*. Alexandria, VA: ASCD.

Lesson Plan Template

Unit title or subject: Integrated Science, Reading, and Mathematics		Week:
Lesson #: 5	Lesson title: Reduce, Reuse, Recycle	Allotted Time: 30 minutes
Desired Results		
<p>State Standard(s): Science Earth and Human Activity K-ESS3-3. Communicate solutions that will reduce the impact of humans on land, water, air, and/or other living things in the local environment.</p> <p>English Language Arts W.K.2. Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about a topic.</p> <p>Mathematics</p>		
<p>Essential question(s): How do my daily decisions impact the world around me?</p>		
<p>Objectives: <i>(Language and Content)</i> <i>Students will (ABCD Action verb + Behavior reference + Condition + Degree)</i> Working individually, students will write an informative text to a family member outlining the importance of reduce, reuse, and recycling items, using at least 3 complete sentences.</p>		
<p>Materials Needed: Student writing folders</p>		
Formative and Summative Assessment Evidence		
<p>Performance Tasks: <i>(include differentiation)</i> Students will communicate solutions to reduce the impact of humans on the local environment around us.</p>	<p>Other Evidence: Students will write and/or draw about the importance to reduce, reuse, and recycle.</p>	

Learning Plan

Process:

ANTICIPATORY SET

Now we have all of this great information on how to reduce, reuse, and recycle... and most of all make less garbage to add to the landfills. But why are there so many people still not reducing, reusing, or recycling? Hold a discussion, call on at least 5 students to speak aloud.

INPUT/ PRACTICE

Today we are going to use the Fish Bowl Activity to look at different perspectives of the 3R's. We are each going to take turns in the Fish Bowl and observing. One person is going to be a person who sees the benefits of the 3 R's versus someone who does not. Let's listen in to why some people are still not participating. Here is the first question to get the conversation started – What can you do to lessen the impact of humans on land, water, air, and/or other living things in our local environment?

Provide students the tie for back and forth, showing patience by all watching, and providing space for student think time to respond.

Activity Reflection - How did that go? How did it feel to be the person who does not believe in recycling? How did it feel to have others watching and listening in? Would you like to use this activity again?

MODEL

Mini-Lesson on how to write a letter must proceed this lesson.

Utilizing the writers workshop model. Students will write a letter to a family member about why they should reduce, reuse, and recycle. Must include the topic, a sentence, and a drawing.

GUIDED PRACTICE/MODELING

Review a letter a past student created to a family member. Talk about key points that students will need to include in their writing.

CHECK FOR UNDERSTANDING

Hold meetings with individual students reviewing work completed so far or assist students on how to get started.

DIFFERENTIATION

Students do not need to take a turn in the middle to participate in the Fish Bowl activity. Students can adjust the amount of writing to their family member. Students can edit their work with the help of a partner. A small group can gather and write together for more support.

Reflection:

A prior lesson may include learning a deeper knowledge about the impact of composting. Students can build together or design a composting bin. Students can bring in items to compost and have a classroom composting center outside of their classroom.

Adapted from: McTighe, J. & Wiggins, G. (2004). *Understanding by design: Professional development workbook*. Alexandria, VA: ASCD.

Integrated Course Reflection:

As I reflect on the construction of my integrated unit of study, I recognize the key to student success and achievement throughout the unit is the need for a safe, supportive, and respectful classroom community in which to thrive in. “It turned out that the stronger that community feeling was, the more the students reported liking school and the more they saw learning as something valuable in its own right” (Kohn, 2006, p.103). Through integrated and interactive activities throughout the lessons, I wanted the students to feel they were made specifically for them, while having the material accessible for the students to construct their own knowledge through hands on learning. Furthermore, “the constructivist critique, which says that a right-answer focus doesn’t help children become good thinkers, also suggests that a right-behavior focus doesn’t help children become good people” (Kohn, 2006, p. xv). Students should feel they want to be a part of the activities without feeling forced to participate. “If we are committed to moving beyond discipline, we need an engaging curriculum and a caring

community. But we need something else as well: the chance for students to make meaningful decisions about their schooling” (Kohn, 2006, p. 118). Meaningful decisions about focus and hard work, in order to create the best outcomes.

To continue, after our own classroom discussions I began to recognize and observe in the classroom as well, how “interest and discovery drive achievement” (Willis, 2006, p. 64). The more our students want to be a part of the lessons and activities, the more knowledge they will naturally absorb. In addition, the final project of the unit, the student’s timeline, will provide a visual tool to assist in learning development by having the opportunity to show off their effort and creativity to a caring audience. To close, I appreciate how beginning with the big idea and then planning for the inclusion of standards is the most meaningful way for students to learn.

References

Kohn, A. (2006). *Beyond discipline: From compliance to community*. Alexandria, VA: ASCD.

Willis, J. (2006). *Research-based strategies to ignite student learning*. Alexandria, VA: ASCD.