

NATURE INTEGRATION IN THE ELEMENTARY CLASSROOM

by

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Elementary Education

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Approved by:

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Abstract

Integrating nature into the elementary classroom is beneficial to the students academically and behaviorally. Because of this, I have created a series of lesson plans that immerse students in nature as they learn material. These lesson plans are based off of the research presented in the beginning of this project. There are lesson plans in all content areas to show that nature integration is cross-curricular. Additionally, there are resources for productive play involving natural elements. I facilitated the ELA lesson in a 4th grade classroom where I found that the interaction with nature lead to creative and focused responses in student writing and class discussion. I have also included an ecological art project that hopes to begin conversations about the lack of interaction modern-day humans have with the Earth.

As educators, it is necessary to be aware of how time outside positively effects our students. If students do not know our planet, we cannot expect them to work to help it. Interaction with natural elements benefits students emotionally, academically, and physically. When educators bring nature into the classroom, or bring the classroom to nature, they help create a generation that knows and cares for their planet.

Nature Integration and its Affect on the Environmental Perspective of Students

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Nature integration in the classroom allows students and nature to connect. Increased natural interaction improves a person's emotional health through stress relief and focus increase. Class time spent with nature forms a student's perspective to be empathetic and understanding of humanity's environmental role, creating generations with respect and motivation to help the environment. According to Richard Louv, children have a good understanding of the problems in our planet, but they do not know the planet itself (2005). Because of this disconnect between students and the natural world, it is imperative that schools include interactive experiences with nature in all aspects of the classroom.

In order to help children have an accurate notion of the environment, educators, parents, and other influences must understand students' current viewpoint. As stated previously, Louv believes that, because of their lack of time outside, children's perception of the environment is a broad understanding that the planet is in danger, lacking the intimate knowledge he had of his local natural atmosphere has a child (2005). The activities that children partake in have changed along with the advancement of technology. Careers have also become more technology-based; therefore people live in more urban environments, creating an even bigger barrier between children and certain aspects of nature. After interviewing elementary students, Michael Bonnet and Jacquetta Williams found the children evaluated places by what activities they could do in them (1998). When spending time outside in urban areas, children will most-likely play in the man-made activity spaces in schools and parks. With sidewalks and rubber safety-chips, humans manage to stay apart from nature even when outdoors. Louv discusses the problem of the large asphalt areas that disconnect children from the natural ground and the "no running" policies that have been implemented in several schools (2005). Though there are still physical and gross-motor benefits from playing in these areas, the emotional benefits of interacting with nature are

lost. Bonnet and Williams also found the students to be highly empathetic towards animals and trees (1998). The children were “very aware and in favor of recycling particularly paper. The connection between recycling paper and 'saving' trees appeared to be straightforward. However, although the children were aware that items other than paper can be recycled...they appeared to be unsure as to how such recycling helps the environment” (Bonnet & Williams 1998). This shows that motivation to help the environment comes from an empathetic viewpoint. When children can connect an action to something they care about and are connected with, they will be committed to act. Because of this source of motivation, children need to spend time with the planet they are constantly told to save.

Hands-on environmental experience is the best way to help children gain an empathetic perspective of the environment. Constance Russell believes that there is a “linear progression of nature experience leading to caring leading to commitment leading to action,” (1999). If educators want a generation to commit to working helping our planet, then there must be emotional motivation. Personal care will motivate people to act, and care is gained through experience. Russell also warns that natural experiences do not always lead to emotional attachment and commitment (1999). She talks about the danger of searching for "pristine" or "wild" nature experiences (1999). When these things are sought out, environmental experiences create the perception that nature is a thing to "go out" and find, not something that we are a part of everyday (Russell 1999). Through media, people's expectation of nature becomes unrealistic, and they find they need to be constantly entertained. In 2014 the attendance of Yosemite National Park was 3,882,642, according to the National Parks Service; while Universal Studios had 8.3 million and SeaWorld 4.7 million, an 8% decrease from 2013 (Pedicini 2015) . A 7 day pass to Yosemite is \$15 per person while the theme parks are approximately \$100 per person,

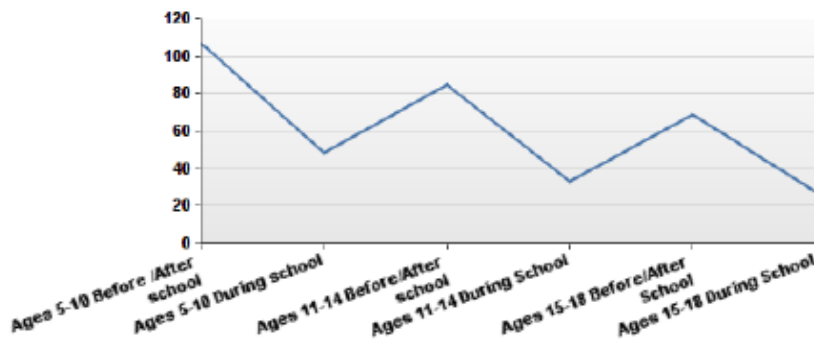
with many costly opportunities once inside the gates (Cary 2006). Where people spend their time and their money are accurate ways to see what is important to them. Amusement parks are filled with constant stimulation and adrenaline-heightening experiences. Natural habitats also include those things, but at a much slower rate. Outdoor experiences also cannot be controlled. Wildlife can be wild, but man-made things can have an excitement-guarantee, which leads many people to pick experiences outside of nature. Similarly to amusement parks, many students will pick to spend free time with technology, a guaranteed entertainer, more often than going outdoors to play. This pattern will most likely change if schools embed the love of natural play into students.

Schools like Fiddleheads Forest School are already doing this. The school's directors and teachers, Kit Harrington and Sarah Heller said that the school help students to "identify senses and use them to observe the world around them; interest in and desire to find a variety of solutions to questions, tasks, or problems; [and recognize and solve] problems through active exploration, including trial and error" (as cited in "Exploring Early Nature-Based Education" 2015). Fiddleheads and other nature-based schools rely on hands-on experience in order for their students to learn. As seen in Harrington and Heller's quote, the students are learning content that is being taught in regular classrooms across the country, and according to Gregory Pitonza, hands-on learning is the best way to present the information. Pitonza found that there were several different themes that correlated to hands-on learning, including students making direct connections (2007). When students connect various objectives to one another or to their personal apparatuses, learning occurs at a deep level. Experience in nature allows that learning to take place through the connection of the physical world to the content they are learning. The advantage to teaching content outdoors is that the students have freedom, but the teacher can structure the activities to assure content standards are being met. Outdoor learning naturally

contains multiple learning types: visual, kinesthetic, and auditory. It is the heightened sensory stimulation that helps children to focus. Louv theorizes that outdoor activity can serve as a replacement for medical and therapy treatments for Attention Deficit Hyperactivity Disorder (ADHD) and therefore, could help the 8 million children in the US that suffer from mental disorders (2005). Disruptions in the classroom will decrease because the students are constantly engaged and have no desire to place their focus elsewhere. The mental health benefits paired with the educational advantages for students reveal that outdoor education is a necessity.

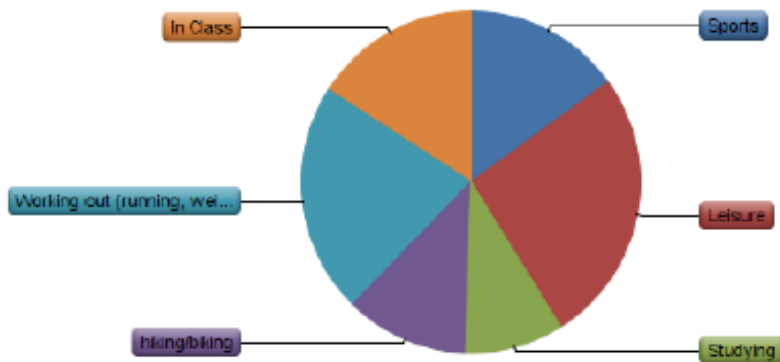
I created a survey in order to find out how much time collegiate students spent outside during various ages in their life, in and out of school. Two of the questions and results are shown below:

3. How much time (in minutes) did you spend outside per day during these situations?



#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	Ages 5-10 Before /After school	0.00	200.00	106.57	55.49	53
2	Ages 5-10 During school	13.00	180.00	47.96	35.91	52
3	Ages 11-14 Before/After school	19.00	200.00	84.19	48.30	52
4	Ages 11-14 During School	0.00	200.00	32.73	33.83	51
5	Ages 15-18 Before/After School	2.00	200.00	68.33	52.43	51
6	Ages 15-18 During School	0.00	200.00	27.17	41.50	35

2. How do you spend your time outside? (measured in Minutes/Day)



#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	Sports	0.00	80.00	15.89	18.62	35
2	Leisure	0.00	100.00	27.52	23.33	48
3	Studying	0.00	70.00	9.93	14.39	44
4	hiking/biking	0.00	51.00	12.43	13.30	30
5	Working out (running, weights, etc)	0.00	60.00	23.03	18.28	36
6	In Class	0.00	100.00	16.81	33.32	16

The increase of age directly correlates with the decrease of time spent outside in and out of school. 37.5% of respondents stated that they spent no time outdoors during school from ages 15-18. The 47.96 min/day average in school outdoor time (ages 5-10) includes recess, leaving little time for teacher facilitated learning spent in nature. According to the survey results, the average time a college student spends outside is 62.3 min/day. I was surprised to see that high of a number, but out of the 16 hours spent awake per day, one hour of that time spent outdoors is not much. The pie graph shows what students do during that hour, and only 28.5% of the people spend class time outside. The little in-class time spent in nature throughout childhood and adolescence show that the need for experiential outdoor education needs to be made a priority. Students are not receiving the benefits of natural self discovery, making it unlikely that students of this generation are experiencing connection motivated commitment to taking care of the planet.

The survey results represent a small and local population. The survey was taken by 56 people, with the female response (70%) outweighing the male response (30%). The demographics of the survey participants were not asked to specify their school location or current age, making it hard to apply the results to a population other than the implied student response. Because of these factors, the results give a local perspective at the broad statistics discussed in this paper, but they cannot accurately represent a certain population's educational relationship with nature.

Nature integration into the classroom benefits the learning of the students and the class community as a whole. Outdoor experiences allow students to gain a higher-quality of learning through discovery. Natural habitats contain a high amount of stimulation, helping students stay focused on the task at hand. In addition to the emotional health benefits, natural experiences lead students to connect with the environment, which will result in a generational perspective of care and commitment to the planet. The welfare of the students and the environment can be increased by outdoor experiences in the classroom, and they do not appear to be happening. Therefore, it is necessary for educators and parents of students to strive to integrate natural experiences into the classroom.

Resources

- Bonnett, M., & Williams, J. (1998). Environmental education and primary children's attitudes towards nature and the environment. *Cambridge Journal of Education*, 28(2), 159-174. Retrieved from <http://search.proquest.com.er.lib.k-state.edu/docview/206066293?accountid=11789>
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- Pitonza, G. A. (2007). *The experience of the need for hands-on-expression* (Order No. 3278516). Available from ProQuest Dissertations & Theses Global. (304702581). Retrieved from <http://search.proquest.com.er.lib.k-state.edu/docview/304702581?accountid=11789>
- Russell, C. L. (1999). Problematizing nature experience in environmental education: The

interrelationship of experience and story. *The Journal of Experiential Education*, 22(3), 123-128. Retrieved from <http://search.proquest.com.er.lib.k-state.edu/docview/275022706?accountid=11789>

nature walk

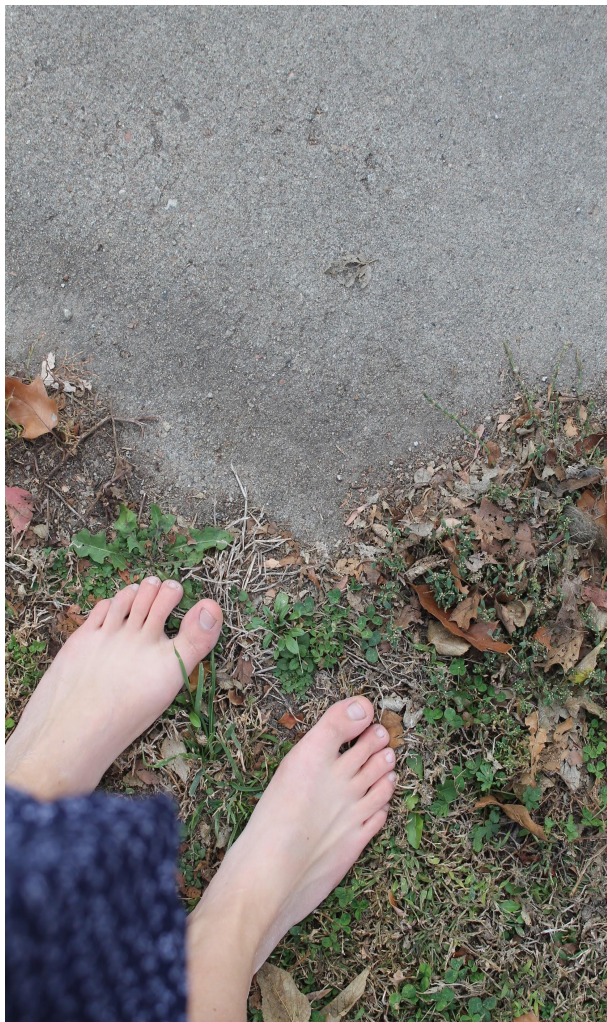
emily tilden



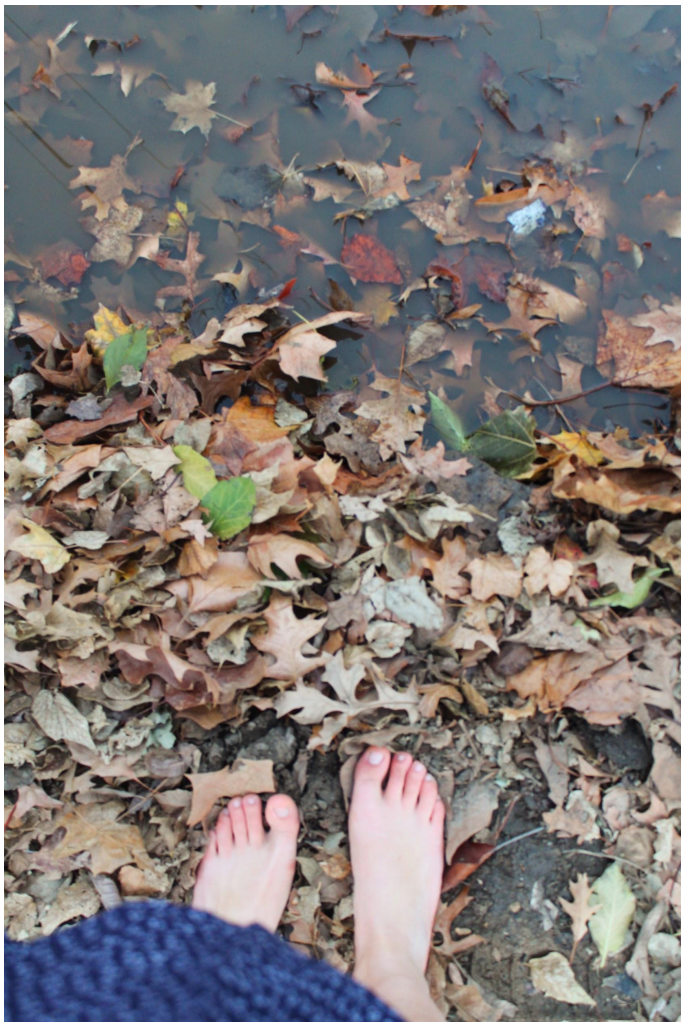
Because of man-made routes, transportation, and schedules, it is very easy for someone to avoid interaction with Earth. Time that is spent outside involves concrete and clothing that protects us from the elements of our planet. This project avoids the ways humans avoid Earth. It looks to open up a conversation about how the evading of our planet leads to the abstinence of working towards healing human cooperation with the environment. Many aspects of our culture are resistant to environmental issues, but people cannot be expected to work towards helping a planet they do not know. Unless there is a disturbance in communities, people will remain content in ignorance. The high amount of mental and physical health benefits that are linked with Earth interaction are not surprising. Humans are created to live in unity with Earth, and we have steadily moved away from it while simultaneously destroying it.

This project is specifically set in Manhattan KS. The paths of my walk are based on average routes taken by Kansas State University students. With either route, it is very easy to get from point A to point B without touching the surface of the Earth. Likewise, it is impossible to get from point A to point B by only walking on natural ground. I am confident that as a student I have gone 24 hours with only touching man-made surfaces. Opening this this conversation at the collegiate level involves factors of education and future leadership in society; this leads to asking how the inevitable environmental related issues will be dealt with. Though humans are avoiding nature interaction now, there will come a point where the problems we have caused can no longer be evaded. Sadly, there will be few that are educated in the areas that are needed to effectively work towards solutions. Nature integration in education and in the everyday life of humanity is imperative. I hope that this projects speaks to the urgency of this issue.









“Our sensitivity to nature, and our humility within it, are essential to our physical and spiritual survival. Yet, our growing disconnection from nature dulls our senses...”

Richard Louve

Date:
Grade: 1
Subject: Math with Nature integration
Lesson Length: 45 min

Name: Emily Tilden
Lesson Title: Acorn Measurement!
Lesson Source: My brain

KCCR Math Standards(s)	1.MD.2. Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps. (1.MD.2)
Essential Question(s)	How do we measure objects?
Lesson Objective	SWBAT measure elements of nature in acorn units. SWBAT collect data based on their own measurements. SWBAT compare their data with their peers.
Assessment/Criteria	Observing how students measure the objects: <ul style="list-style-type: none"> - Mastery: attempting no gaps between acorns and counting acorns to the nearest whole acorn unit. - Developing: most of the time is not leaving big gaps when lining acorns up. Knows to count acorns, not always accurate.
Disciplinary Literacy or Content Vocabulary <small>(terms: technical, figurative, locality, quantitative, multiple meanings, acronyms, easily confused)</small>	Measurement, units, length,
Materials Setting Resources	<u>Materials</u> <ul style="list-style-type: none"> • A LOT of acorns (7-10 per pair) • Large sticky notes <u>Setting</u> <ul style="list-style-type: none"> • In the classroom • Outside <u>Resources</u> <i>Inch by Inch</i> by Leo Lionni https://www.youtube.com/watch?v=iwqh-6R3SxU
Adaptations/Modifications <small>(guided notes, extended time, fewer questions, fewer distractors, alternate setting, etc.)</small>	<ul style="list-style-type: none"> - If students cannot keep track of their acorns, then the teacher will provide an acorn ruler. - Students can collect objects and then bring them to a concrete area to lower stimuli - Students can work individually if they need to do that to focus - Students may be required to measure more or less objects depending on how quickly the student understands the content.
Modalities <small>(visual, auditory, kinesthetic, tactile)</small>	<u>Visual</u> : graphic organizer, acorns lined up , <u>Auditory</u> : wind, birds, animals , teacher instruction, peer/partner discussion <u>Kinesthetic</u> : walking around outdoors <u>Tactile</u> : holding acorns , holding natural objects they are measuring.
Instructional Strategies <small>(graphic organizer, cooperative learning, discussion, technology integration, etc.)</small>	Nature integration , discussion, cooperative learning, graphic organizer

Est. Time	Lesson Procedures/Activities Write out detailed lesson procedures. Be sure to include 4-5 important questions you will ask during the lesson and the expected student responses. Your plan should be detailed enough for another teacher to teach it without having to ask you any questions. Numbering and bullets are permissible and encouraged.
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Beginning	15 min	<p>Students will sit down on the carpet in a circle. The teacher will explain that we will be measuring the length of objects today. The teacher will read aloud <i>Inch by Inch</i> by Leo Lionni (or watch the video. The video shows the inch worm measuring, but it is rather slow and boring).</p> <p>Think in your head. How does the inch worm measure the birds? What is he doing? Okay, pair up and discuss your thoughts with your neighbor. The teacher will facilitate whole-group discussion allowing students to share their thoughts.</p> <p>Think in your head. What is measurement? Okay, pair up and discuss your thoughts with your neighbor. The teacher will listen to the responses in whole group discussion and write them on a large post-it.</p> <p>When I say that the inch worm was measuring the length of the bird's tail, what do I mean by length?</p> <p>The teacher will record responses on large post it after students discuss in partners.</p> <p>The teacher will explain that the students will be like the inch worm and go outside to measuring things using acorns.</p> <p>What will it look like to measure things like the inch-worm using acorns?</p>
Middle	25 min	<p>The teacher will show the students what it will look like to measure things in acorns by placing a pencil on the desk and lining up the acorns next to it. Now how do we know how many acorns long this pencil is? (counting)</p> <p>The class and teacher will count out loud together.</p> <p>The students will then be paired up and given a small cup full of acorns. The teacher will ask each pair to measure a notebook using acorns. Students will raise their hand when they have done it, so the teacher can make sure that each student understands the task.</p> <p>Each pair will receive a handout and will make their way outside. The teacher will specify where the students need to be and follow regular recess transition procedures.</p> <ul style="list-style-type: none"> - The best place to go outside would be in the grass or dirt. Avoid spending time on asphalt or concrete unless students need to use the hard surface to measure. <p>Students will find various natural objects and measure them using their acorns. Students will have 15 min to measure different objects and fill out their handouts (time may be adapted depending on student progress)</p>
End		<p>Students will transition back inside. Students will come back to the carpet and sit in a circle holding their hand outs. Students will pair up and discuss their favorite object they measured and how many acorns long it is.</p> <p>Did anyone have the same object as their partner? Anyone have a different object? (these questions introduce students into the idea of comparison)</p> <p>Reflection questions:</p> <p>Would it be possible to measure the length of the room using acorns? How many acorns do you think it would be?</p> <p>Could we measure objects using something other than acorns? Why can we do that? How would we do that?</p>

Name _____

Acorn Measurement

What object are you measuring?	What is the length in acorns ?
Pencil	

Draw a picture of your favorite object you measured:

The Life of a Plant

Grade Level: Middle Elementary (can be modified for K-8)

Subject: Life Science (Nature/Art integration)

Length: Range: 50min-extended project

Student Learning Objectives:

- Students will investigate how plants work:
 - o Early Elementary: what helps/harms plants
 - o Late elementary/middle school: understanding photosynthesis and why water and sunlight benefit plants.
- SWBAT conduct their own experiment containing elements of the scientific method.
- Students will have a higher appreciation for nature through interacting with it and understanding its basic elements.
- Students will create diagrams based on data:
 - o Elementary: basic observational pictures of plant stages
 - o Middle/High school: basic drawing of cellular structures during different photosynthetic stages.

KSDE Standards:

- 2nd grade
 - o 2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
 - o 2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow.
 - o 2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.
- 5th Grade
 - o 5-LS1-1. Support an argument that plants get the materials they need for growth chiefly from air and water.
 - o 5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
- Middle School
 - o MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

Materials:

- Seeds
- Soil
- Plastic cups(clear) (2 for each student)
- Data Collection Worksheets (see end of document)
- Art supplies:
 - o Water colors
 - o Brushes
 - o Colored pencils
 - o Sturdy paper
 - o Labeled worksheets (early elementary)
- Sharpies

Activity (For 2nd grade)

- Each student will receive two plastic cups filled with soil and 6 seeds (3 for each cup).
- Each student will create a hypothesis for what locations the plants will grow best in. They will then place their cups in their chosen locations on school property. One cup will be placed where the student thinks it will grow best and the other will be placed in a poor environment for a plant.
- The students will continue to water the plants and track how much water the plants are given. It is up to the student how much water they give their plants.
- The students will draw or paint their plant/cups once a week.
- Students will continue to collect data and fill out their worksheet.
- After a month or two of data collection, the students will display their data next to their two cups. The teacher will collect the data into a class collection and the results will be analyzed together.
- They will look at how tall the plants are compared to the amount of sunlight and water the plant was given.
- The students will right a couple sentences in conclusion, saying if they hypothesized correctly and what they think a plant needs to grow after doing this experiment.

Activity (For Middle School)

- The activity will be similar to the second grade one, but the students will just plant one plant.
- The students will plant it outside in the best location that they see fit.
- Will have detailed research outline. Scientific method included and much more freedom to students on what they write.
 - o Students hypothesis what location will be best. Their explanation as to WHY that location is best must include the process of photosynthesis/ why water and sunlight are good for plant growth.
- The students will create visual logs of their plants each week. In addition to the observational drawing, they will also create basic magnified, cellular diagrams for each photosynthetic stage (sunlight added, energy taken, water added, etc.)

- Class data will be taken and analyzed as a class.
- Each student will determine conclusion based off individual data and class data.

Assessment:

- The students written experiment summary (2nd grade: scientific method worksheet), weekly visual log, water log will show their understanding of the scientific method and their understanding of what a plant needs/photosynthesis.

THE LIFE OF A PLANT

Write down questions you have about how plants work:

Make a list of things that a plant needs to grow: (words or pictures)

What thing from your list is MOST important for plants to grow? _____

Why do you think it is the most important?

COLLECTING DATA:

DATE	AMOUNT OF WATER Measured in Tablespoons		SUNLIGHT?	
	OUTSIDE	INSIDE	OUT	IN

CONCLUSION:

How was your data the same as the class data?

How was it different?

What is the best location to grow a plant? Why?

Place-Based Lesson Plan Form

Date: 11/3/2017

Grade: 4

Subject: Earth Science and Social Studies

Lesson Length: 60-90 min (two days)

Name: Emily Tilden

Lesson Title: Konza Prairie

Lesson Source: Konza Environment Education Program

<u>KCCR Social Studies Standard(s)</u> Standard/Benchmark: Discipline. Knowledge/Skills	4.Geography.Places/Institutions: political (e.g., state lines, boundaries, capitals) v. physical features (e.g., mountains, plains, rivers), ecosystems
<u>NGSS Science Standard(s)</u>	STANDARD 4: EARTH AND SPACE SCIENCE The student will observe objects, materials, and changes in their environment, note their properties, distinguish one from another, and develop their own explanations making sense of their observations. Benchmark 1: The student will develop an understanding of the properties of earth materials. 4. The student observes and records the properties of fossils and discusses what fossils are.
Essential Question(s)	Compare all of the ecosystems. How was the wildlife different in each one? Why do you think that is? What are some strategies you used when observing the wildlife? What is the difference between physical features and the political features we have observed where we live?
Lesson Objective	Students will be able to classify different earth materials into the ecosystems/habitats that they observe on the Konza prairie. (blooms understand) Students will be able to discover different fossils found within the physical features of the prairie. (blooms understand) Students will be able to construct a research presentation about a specific physical feature found on the prairie. (blooms create)
Assessment/Criteria	Students will be evaluated on their ability to observe and record data at the Konza. Students have mastered the content if they are able to connect their data/observations to the features of the ecosystem. The rubric will be used for the presentation only.
Materials Technology Resources Setting	<u>Materials</u> • binoculars <u>Technology</u> • Students may choose to use technology to create their presentation the following day. <u>Resources</u> <u>Setting</u> • Konza Prairie
Adaptations/Modifications (guided notes, extended time, fewer questions, fewer distractors, alternate setting, etc.)	If students are unable to go to the Konza, they are welcome to document observations based on pictures of the different habitats the class observed.
Modalities (visual, auditory, kinesthetic, tactile)	<u>Visual</u> : binoculars, viewing the Konza, presentations <u>Auditory</u> : the sounds of the prairie, teacher/docent instructions <u>Kinesthetic</u> : walking around the Konza to the different habitats <u>Tactile</u> : touching the fossils and the plant wildlife at the center.
Instructional Strategies (graphic organizer, cooperative learning, discussion, technology integration, etc.)	• Nature integration, place based learning, discussion, cooperative learning, etc. • Day two: constructivism

	Est. Time	Lesson Procedures/Activities Write out detailed lesson procedures. Be sure to include 4-5 important questions you will ask during the lesson and the expected student responses. Your plan should be detailed enough for another teacher to teach it without having to ask you any questions. Numbering and bullets are permissible and encouraged.
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Preparation for Lesson (logistics, pre-knowledge, etc.)	10 min	<ul style="list-style-type: none"> - The teacher will facilitate a brief class discussion about the Konza prairie and ecosystems to better prepare the students for the field trip. - The teacher will ask students to pair up and discuss what do you think an ecosystem is? If you don't know, use the parts of the words that are familiar and hypothesis what it might mean. <ul style="list-style-type: none"> o Students will share out their estimations and the teacher will write (an accurate) class constructed definition on the board. - The teacher will then explain that the class will be going to a Prairie ecosystem. Has anyone ever been to the Konza prairie? What kinds of things did you see/hear/smell/touch? <ul style="list-style-type: none"> o The teacher will make a list of student observations on the board. - The teacher will explain that we will be making observations tomorrow and looking at fossils. Remind your table partner what a fossil is. Some students will share their definition out loud. - Tomorrow we will be learning about the different habitats and the different physical features in the habitats (including wildlife). We also will be comparing the Konza prairie features with the features of the space around our school (streets, political boundaries, etc).
Beginning	30 min	<p>Students will arrive at the Kona Prairie center and go to the stone House at the center.</p> <p>In the basement there is a classroom and students will be seated in groups of three (pre-assigned by the teacher. The students will be participating in an inquiry based science observation of the different fossils in the center (fossils include both plants and animals). Students will complete a graphic organizer that categorizes the fossils based on student observations. Students will use their prior knowledge to sort the fossils into the different habitats they may have come from.</p> <p>Questions for the teacher when walking around/partners to discuss when finished.</p> <p>What strategies are you using to sort the fossils?</p> <p>Do you see and similarities between some of the fossils? What are they?</p> <p>After students have completed the graphic organizer, students will find another group and compare answers and discuss the following question:</p> <p>Discuss you thinking/strategies behind the categorization of the fossils. Explain your thinking to the other group.</p> <p>The students will then transition into the outdoor part of the day. The students will stay in their groups of three.</p>
Middle (Explain/Explore)	45 min	<p>Students will be traveling in groups of three to the three of the different habitats on the Konza: grassland, shrubland, and stream/riparian area.</p> <p>Students will have a docent to lead them and help guide them in what they are observing. The groups will spend 15 min at each habitat and will trade jobs at each habitat:</p> <ul style="list-style-type: none"> - One student uses the binoculars to find wildlife and make visual observations - One student will make observations based on sound, touch, and smell. - The other student will be the recorder, and record all of the observational data the students are saying. <p>It is important that the students are quiet as they move around the prairie so that they do not scare off the wildlife that may be around.</p> <p>The observation recording sheet will be a modified version of the one pictured. Instead of asking for the number of birds, students will be asked to observe:</p> <ul style="list-style-type: none"> - The different types of physical features they see as they walk and observe each habitat. Students should identify the features by name and write a one sentence description of what they see. - The different types of plant life they see. Students should ask the docent for the names of the plants, but if they do not know the name the students can write a description or draw a picture of what the plants look like. - The different animals that they see. This includes insects! Students will write down the name of the animal and a brief description of the observed actions of the animal. <p>After the students have finished their time at the last habitat, they will meet back at the stone house and head back to school.</p> <p>Once back at school/on the bus, the teacher could ask the following reflection questions to be discussed in pairs:</p> <ul style="list-style-type: none"> - What was something that surprised you at the Konza? - What was your favorite part of the day? - What is one thing you learned today? What is one thing that you already knew about, but heard again today? - which habitat did you like best? Why?

<p>End (Extend/Evaluate)</p>	<p>DAY 2 90 min</p>	<p>As a reflection and connection of the observations, students will be creating brief presentations about the information at the prairie. Students will be split into 9 different groups. Each group will be assigned a habitat and one of the three things that should have been observed on the day prior (e.g. Grassland; Physical Features would be given to one group). The students will be given 45min to use their observations, internet, book, etc. to create a presentation over their topic. Students can create posters, ppts, etc. They must include some observations from the Konza. Each presentation should address the following questions:</p> <ul style="list-style-type: none"> - What is something that is unique to the habitat? - How do the physical features affect the plant and animal life at the habitat? - How does this habitat compare to the entire prairie ecosystem
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Rubric

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Compare the habitat to the others	The presentation shows what makes the habitat unique/different from the other habitats observed.	The students give examples of different aspects of the habitat, but fail to mention how it compares to the other habitats.	This part of the presentation was not there.
Physical Features relating to the plant and animal life	The students are able to demonstrate and justify how the physical features affect the plant and animal life in their habitat	The students discuss the plant and animal life, but only briefly show the relationship between them and the physical features of the habitat.	The students fail to address the relationship between the physical features and the plant and animal life.
Presentation is centered on the prompt given (habitat and subject)	Presentation is centered on the prompt given (habitat and subject)	The presentation relates to the topic, but there is no central idea.	The presentation fails to be on the given topic.
The observations of the students are used to justify or exemplify the different aspects of the habitat	The observations of the students are shown and talked about in detail. They are used to justify or exemplify the different aspects of the habitat.	The observations of the student are present, but they are not talked about or they are not used to justify the other information.	The students do not discuss their own observations.
Relation to the Prairie ecosystem	Student shows they understand that habitats make up ecosystems by showing how their habitat/wildlife in it is a part of the prairie. This could be done through specifying location, similar physical features, etc.	The student demonstrates little understanding of the relationship between the prairie ecosystem and the smaller habitats within it.	The presentation does not relate to the prairie ecosystem at all.

Mastery: 18

Developing: 14

BLOCK C LESSON PLAN FORM

Kansas State University

Date: 11/13/2017
Grade: 4
Subject: Language Arts
Lesson Length: 35-45 min

Name: Emily Tilden
Lesson Title: Natural Mythology
Lesson Source: my brain
Nature integration in green

KCCR ELA Standard(s) Standard/Benchmark/Description	RL.4.9 – Compare and contrast the treatment of similar themes and topics (e.g., opposition of good and evil) and patterns of events (e.g., the quest) in stories, myths, and traditional literature from different cultures
Essential Question(s)	What are some similarities and differences in the myths explaining natural phenomena?
Lesson Objective	SWBAT compare the themes in myths from different cultures in explaining natural phenomena (analyze) SWBAT construct stories/myths that explain current natural elements using the themes found in ancient mythology. (Create) SWBAT connect nature experiences with the themes found in mythology (analyze)
Assessment/Criteria	The students will be formatively assessed based on their writing and graphic organizers. I will collect the graphic organizers and peer edit sheets. <u>Graphic organizers:</u> Students show and understanding of the themes shown in the myths that were read aloud and discussed. Students applied this knowledge in a creative way through story telling based on their own experience in nature . <u>Peer Evaluation:</u> The purpose of this evaluation is to have a check that student's are following the guidelines with their stories. I will collect the evaluations and look at the assessor. I want to see if the peer evaluator was able to find the themes in their peers story/ justify why it was or was not there.
Content Vocabulary	Mythology, Aztec, Aborigine, mystical, natural elements, natural phenomena, theme
Materials Technology Resources Setting	<u>Materials</u> <ul style="list-style-type: none"> Student collection of natural elements <ul style="list-style-type: none"> Closing worksheet <u>Technology</u> <ul style="list-style-type: none"> <u>Resources</u> <ul style="list-style-type: none"> Natural <i>Landscapes of Legend: Sacred Skies</i> by Finn Bevan <u>Setting</u> <ul style="list-style-type: none"> classroom school outdoor field
Adaptations/Modifications (guided notes, extended time, fewer questions, fewer distractors, alternate setting, etc.)	The alternate setting will help focus with the movement and time outside. Since the lesson is interactive, engagement should be high. Students are able to go to a chosen location for the group read aloud time. If students need extended time to write or think, the lesson will be flexible in accommodating that.
Modalities (visual, auditory, kinesthetic, tactile)	<u>Visual:</u> looking at nature; pictures in the book, graphic organizer <u>Auditory:</u> teacher read aloud, teacher instruction, student discussion <u>Kinesthetic:</u> walking around outside <u>Tactile:</u> holding natural elements,
Instructional Strategies (graphic organizer, cooperative learning, discussion, technology integration, etc.)	Nature integration, cooperative learning, discussion

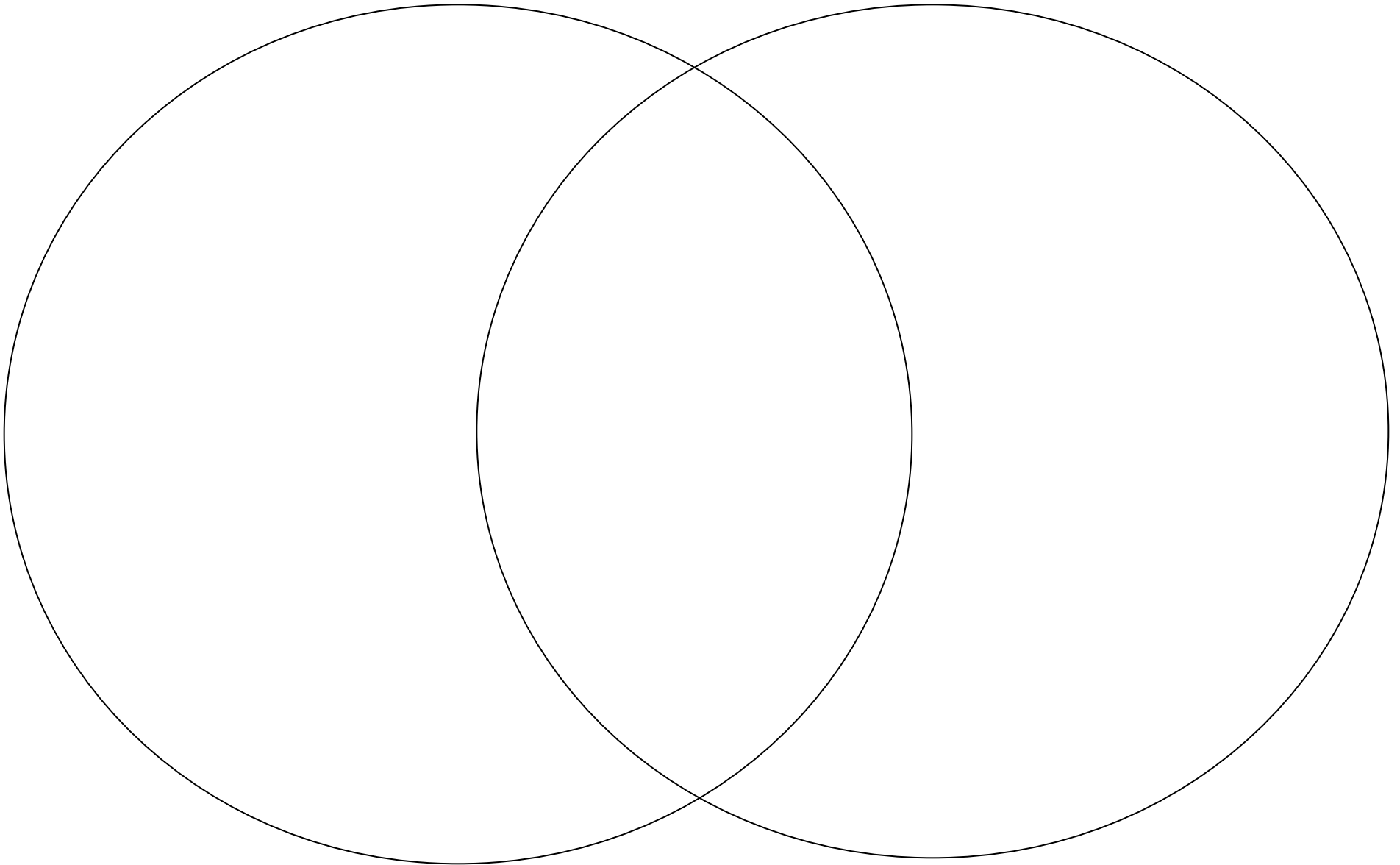
Est. Time	Lesson Procedures/Activities Write out detailed lesson procedures. Be sure to include 4-5 important questions you will ask during the lesson and the expected student responses. Your plan should be detailed enough for another teacher to teach it without having to ask you any questions. Numbering and bullets are permissible and encouraged.
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Beginning (Engage)	12-14 min	<p>The lesson will begin with two interactive read-alouds. The students have been experiencing different greek myths in the last week, so they are familiar with what they are and why they were written. I will be reading two myths from a book.</p> <ul style="list-style-type: none"> - The first myth is an Aztec myth explaining rain called, <i>Lord of the Rains</i> <ul style="list-style-type: none"> o Why do you think people told stories like this? o Do we still tell stories that explain natural elements even if we know the science behind it? <ul style="list-style-type: none"> ▪ The angels are bowling, etc. - The second myth the teacher will read teacher will read is from the Aborigine people (indigenous to Australia) called, <i>The Rainbow Comes to Earth</i> <ul style="list-style-type: none"> o What similarities do we see with the story and the Aztec myth? <ul style="list-style-type: none"> ▪ The teacher will create a list of patterns and common themes on the board ▪ Looking for: relationship between earth and the sky, weather elements, answers “why” question, mystical elements, natural elements from place of origin: corn, mountains, explained a few natural phenomena: Aztec: jars Aborigine: thunder storm o Differences? <ul style="list-style-type: none"> ▪ Aztec: gods, helping people, agriculture (corn) ▪ Aborigine: spirit, not god. The people could hurt the serpent,
Middle (Explain/Explore)	25 min	<p>Go outside!</p> <p>The purpose of going outside is that students can think of their own story that explains an element or wonder of nature. Students can collect natural elements, experience nature (wind, sounds of birds, etc), to create their story.</p> <ul style="list-style-type: none"> - Students will spend about 10min observing and collecting. Students can bring paper and white board if they want to record observations. <p>The class will come back inside and students will use graphic organizer to think of a story. Students will be telling their myths orally like the ancient tradition of storytelling.</p> <p>The teacher will group students in groups of 3: each student will tell their story including the themes on the board. Students will evaluate each other as they share (with guiding sheet)</p> <ul style="list-style-type: none"> - Peer evaluation: did you see this theme? Similar to myth in class? Differences?
End (Extend/Evaluate)	10 min	<p>The teacher will choose two students to share their stories with the class. The class will identify the themes that they saw in the original myths. This discussion will end the lesson.</p>

The Mythology of Nature

Lord of the Rains

The Rainbow Comes to Earth



The Mythology of Nature

Write adjectives that **describe** the natural element:

Create your own explanation of **why** this element of nature happens/exists. You can use pictures or words in the box below:



Emily Tilden

Honors Project: Nature Integration in the Classroom

ELA Lesson Reflection

16 November 2017

Grade: 4 Date taught: 11/16/2017 Subject: ELA

Purpose

I was asked to teach a lesson on mythology in a 4th grade practicum classroom, so I created one in which nature was integrated. The purpose of nature integration in this lesson is to enhance focus, increase student interaction with nature and each other, increase engagement, and enhance all aspects of the lesson. I was interested in comparing the classroom environment before and after the time spent outdoors.

Reflection

The first part of the lesson was taught inside. Two myths were read aloud and discussion happened during and after the readings. Discussion went well. Most students participated in their team discussion and the students that shared out were on track with the learning objectives. Students' engagement and interest levels during the indoor portion were medium/low.

Once it was stated that the class was going to go outside, the energy level went up in the classroom. Students connect time outside with joy, movement, and play which elicits a happy and energetic response. Students were to go experience or find an element of nature and then write a myth explaining the phenomena (reflecting the theme of the myths read in class). Once outside, students sprinted towards the direction of the grass. Movement is a very important part of nature integration. Much of what we do is stationary, but our bodies are made to move. Students walked around, dug in the dirt and grass, observed what was happening around them. One student noticed a hawk flying above, and a few students joined him in observing the large

bird. Many students brought pinecones back inside and a couple tried to bring very large limbs into the classroom. One student found a moth and once inside, he placed it in a container.

Approximately 4-5 students did not connect with the natural aspect of the lesson, and therefore, had a low interest level for the assignment following the time outside. They did not care about the twig that they brought inside and they had a low level of creativity when story telling. On the other hand, multiple students that have a pattern of low focus and motivation in the classroom connected with this lesson. The small sticks, leaves, and pine cones acted as fidgets for some students. The student that brought the moth inside is a high achieving student that often gets board in the classroom, leading to him checking out and participating in unwanted behavior; i.e. talking to friends, making characters out of pencils and erasers, etc. However, in this lesson, he was eager to describe the moth and write about his new friend, Mr. Fuzzy Legs.

There were 3-4 students that were still lacking focus and motivation to finish. They fiddled with their natural object while talking with friends, drawing, etc. Talking with them would momentarily motivate them to work, but then they would get distracted again.

Conclusion

I observed increased creativity and excitement following the time outside. Excluding the transition back indoors, the students were on task in their conversations and on paper. The time outdoors served as a brain break that included a new setting, movement, and fresh air. Students benefitted from this time and had a higher amount of focus for the remainder of class. Time spent outside lead to students making strong connections with mythology, storytelling, and natural elements.

Student Work

11/17 Students reached full mastery. Their work included adjectives of their natural element and connected it to a story. The stories described how the element came to be in a creative way that reflected the myths read in class.

3/17 developing: These students did not fully understand the task. Most of these students described their object and how it actually came to exist. For example, one student found a rocks

and said that rocks are formed from minerals. That is true, but the objective for this lesson was to create myths to explain natural phenomena.

3/17 had a large portion of the graphic organizer incomplete. These students brought in objects from outdoors, but only drew it on their paper with no adjectives or story to go with it. These students were off task during class work time, and did not complete the assignment.

Response

The depth in which nature was integrated into the lesson should be improved. One strength of nature integration is the freedom that it gives students. That being said, students benefit most during a lesson when they intentionally interact with nature. Adding a nature journaling aspect to the time spend outside would add a new element of observation and data recording with words and drawings. This would help clarify expectations for the student task and act as a guide to students that have a hard time focusing. Students would gain a better understanding of the different plants and animals they are observing during their time outside. Students would have a created list of adjectives and facts about the elements of nature they observed, and their stories would have naturally included more detail.

University Honors Project

Emily Tilden | Creative Project
University Supervisor: Jill Haukos



- Hands-on-nature: Anarchy Zone/International Day of Mud
- www.earthplay.net

PLAY!

Interacting with nature enhances **brain breaks** that students need throughout the school day.

Resources for during school outdoor play:

- **Ultimate Camp Resource:**
this site is filled with educational game ideas that can last from 6 min to 30 min.
 - Frog, Insects, & Flowers
- **Middle School Movement:**
this pdf contains ideas for active brain breaks; all would be enhanced if moved outdoors!
 - http://fsnep.ucdavis.edu/trainings/town-halls/town-halls/copy2_of_14activitybreaks_000.pdf

The Life of a Plant | Science

Inquiry lesson over the needs of a plant & photo synthesis.

Objectives:

- SWBAT investigate how plants grow:
 - Primary: how sunlight and water affect plant growth.
 - Secondary/middle level: understanding photosynthesis and the role of sunlight.
- SWBAT create diagrams based on collected data:
 - Elementary: Basic drawings of observed plant structures and stages
 - Middle level: drawing of basic cellular structures during different photosynthetic stages.

Activity Summary:

- Each student will place one plant in a location the plant will do best in, and another in the poorest plant environment.
- Students will take care of plants how they see fit and measure the amounts of water and plant height every day.
- Students will collect data for 4 weeks and then compile data into a classroom set. The students will compare their own findings with those of the whole class.

Mythology of Nature | ELA

A lesson that focuses on ancient mythology and relating it to current natural phenomena and writing.

Objectives (grade 4):

- SWBAT compare the themes in myths from different cultures in explaining natural phenomena (analyze)
- SWBAT construct stories/myths that explain current natural elements using the themes found in ancient mythology. (Create)
- SWBAT connect nature experiences with the themes found in mythology (analyze)

Activity Summary:

- The students will read two ancient myths explaining natural phenomena. They will compare the myths using a Venn Diagram
- Students will go outside and find a natural object or element to write a myth about.
- Students will practice nature journaling and observations while outdoors.
- Students will write a myth explaining how their element came to be. They will self-assess how their myth reflects the themes of the ones read in class.

Acorn Measurement | Math

A primary lesson teaching measurement and length using natural elements.

Objectives: (grade 1)

- SWBAT measure elements of nature in acorn units.
- SWBAT collect data based on their own measurements.
- SWBAT compare their data with their peers.

Activity Summary:

- The teacher will read *Inch by Inch* by Leo Lionni aloud and facilitate partner and whole group discussion.
- The students will go outside and measure different natural objects using acorns.
- The students will reflect on their measurements and predict what different scenarios would be like.

Ecosystems: Konza Prairie | Social Studies

A place-based lesson in the Konza Prairie that prompts students to explore and analyze the features of the ecosystem.

Objectives: (grade 4)

- SWBAT classify different earth materials into the ecosystems/habitats that they observe on the Konza prairie. (blooms understand)
- SWBAT discover different fossils found within the physical features of the prairie. (blooms understand)
- SWBAT construct a research presentation about a specific physical feature found on the prairie. (blooms create)

Lesson Summary:

- Students will be traveling to the Konza Prairie Biological Station and experiences the resources there.
- Students will be observing the different physical features within the prairie by classifying earth materials and fossils.
- Students will collaborate to create a presentation using the data they collected at the site.