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SCE 4310

**Lesson Analysis Assignment**

**Activity Introduction**

Before taking this course, I’d always thought that lessons published online, were perfect and did not be to be changed. I use to only look at how cute the activity was, what the children would be taking home to mom and dad, and how “hands-on” it seemed. I’ve found a variety of lesson plans from online sources that I believed to be ready to print and taught, but I’ve learned that is not the case. Science 4310 has opened my eyes in seeing that not all lesson plans are not perfect and ready to use just because they are published. These lessons are called “cookie cutter” lessons because they seem perfect, but may need to be adapted to reflect educational practices. For this assignment, I’m going to take a look at a lesson plan I found from lessonplanspage.com titled Aquatic Wildlife and Pollution and analyze just Day 1 it to see if it addresses “the three legs of science.” I chose this specific lesson to analyze because it can be “easily and cheaply modified,” according to Shiland’s suggestions in *Decookbook It!*. I will demonstrate my knowledge by analyzing the strengths and limitations of the ‘3 legs’ in this published lesson plan and make appropriate adaptions. Again I will only be focusing on analyzing Day 1.

**Science Content**

The science content was about how polluting the ocean can affect marine wildlife. The important concepts this lesson addresses are: how to distinguish aquatic wildlife from other wildlife, how plastic items relate to wildlife, how animals would perceive these plastics, what effects pollution has on these animals, and what caused the plastics to get there. As I was looking through this lesson trying to determine if this content was complete and accurate, I realized just how vague this “cookie cutter” lesson plan was. I don’t believe the content of how animals would perceive the plastics is accurate because the students are asked to sort these plastics into “very likely to be considered food”, “somewhat likely to be considered food”, and “not likely to be considered food”. This is not an accurate of teaching how animals perceive plastic because just because a six pack ring doesn’t look like food doesn’t mean it’s not harmful to marine wildlife, same goes for fishing line. I believe the teacher should not only have plastic items in the garbage bags, but all sorts of examples of pollution into the ocean and students could sort them for recycling purposes into plastic, paper, aluminum, and cardboard. Overall, I found this lesson to be extremely vague when it came to the leg of content. This limitation makes it hard for other teachers to duplicate this lesson. I do think a strength of this lesson is that students will be able to go outside and connect their learning’s to their lives by examining their playground for pollutions. This is an example of “students doing science.”

**Science Process Skills**

The main skills focused on in this activity are communicating, classifying, and predicting and it states the process skills being focused on in the beginning of each paragraph. I would say that at some points in the lesson, students are doing science because according to Weinburg’s “Three Legs to Stand On”, she states students are doing science when they are using their background knowledge to build on their current understanding and using processing skills for scientific purpose and exploration. In this lesson plan, the students are using their background knowledge to classify the pictures of wildlife, but the limitations come through because the teacher explicit teach what the process skill of classification is. Like Weinburg states, “Early elementary teachers must actually teach the skills in order for children to be able to use them for scientific exploration.” The children may be using their background knowledge to classify and sort the pictures given to them, but if they are not explicitly taught what classifying means, they may have a misunderstanding and this will carry on with them into upper elementary. At the end of the activity, they have a class discussion of their results. Students used observing, describing, collecting data, and discussing for scientific purpose, but were they actually doing science? I believe that students were not really doing science in this lesson. I believe this lesson was more of an activity than an experiment. I do believe a strength of this lesson was during the engage, the students were able to classify and sort their pictures in whichever way they wanted. This allowed for the “the starting point” as Harlen calls it, which he says should to be the student’s ideas and not the scientific ones (Harlen, p. 57). A limitation to this lesson is that during the explore portion of the lesson, the students are not recording any data. With this garbage bag full of plastic items, group members are just instructed to “take out and examine all objects” and then “sort their plastic materials into three groups”. According to Kay in the article, Science Notebooks- Writing About Inquiry, she states, “In a science notebook, students should be gathering information and taking notes so they can do something with the information later.” For example, the students could create a chart on how they sorted their plastic items because they would have notes in their science notebooks to look back on.

**The Nature of Science**

The Aquatic Wildlife and Pollution lesson portrayed science as being social, but failed to do so. This lesson plan has students working in groups majority of the time, but that doesn’t mean the kids are practicing this component of the nature of science. For example, lets take a look at the engage portion of the lesson. Students are working in groups of 4 or 5 to classify pictures of types of wildlife. In order for the nature of science, science is social, to happen the teacher must explicitly teach how science is social and that scientists communicate with one another and work together and support and learn from one another. In addition to teaching it explicitly, the teacher should have the groups walk around after the engage activity so that students can learn from each other and get ideas of what their other classmates were thinking.

Science demands evidence is another component to the nature of science and I believe this lesson again lacked in this area because science notebooks were failed to be mentioned. To incorporate this aspect of NOS, the teacher needs to explicitly explain that science demands evidence and model how scientists present their findings and observations through science notebooks. These notebooks enable scientists to inform others about their work, to expose their ideas to other scientists because again science is social as well.

Overall this lesson plan, does not explicitly teach any aspect of NOS, but I do believe because this lesson is so student-centered and group-orientated, there are a variety of ways the teacher could incorporate several aspects of NOS into this lesson. Science is not authoritarian could be another NOS addressed to students to help students listen to each other’s ideas and thinking. We could explicitly teach our students that no scientist, no matter how famous, is empowered to decide for other scientists what is true. During the class discussions in this lesson, we need to teach the children that when someone comes up with a new or improved idea, everyone is entitled to their opinion and we must respect each other’s beliefs.

**Resources**

Campbell, Brian, and Lori Fulton. "Science Notebooks- Writing About Inquiry."

N.p., n.d. Web. 13 Oct. 2014.

Harlen, W. (2001). *Primary science: taking the plunge*. Portsmouth, NH: Heinemann.

Reinhardt, Shalynn. "Aquatic Wildlife and Pollution." *HotChalk Lesson Plans*

*Page*. N.p., n.d. Web. 14 Oct. 2014.

Shiland, Thomas W. "Decookbook It!" N.p., Nov.-Dec. 1997. Web.

Weinburg, Molly. "A Leg (Or Three) To Stand On." N.p., n.d. Web. 13 Oct. 2014.

**\*\*Modifications added to lesson plan are in BLUE.\*\***

[](http://lessonplanspage.com/)

Aquatic Wildlife and Pollution

**Subjects:** Science, Social Studies

**Grades:** 1, 2, 3

**Title :** Aquatic Wildlife and Pollution

**By :** Shalynn Reinhardt

**Primary Subject :** Science

**Secondary Subjects :** Social Studies

**Grade Level :** 1-3

**What do I want students to know?**

1. Students will draw pictures of healthy and hazardous marine and freshwater environments.

2. Students will describe the effects of the pollution of ~~plastics~~ on wildlife.

3. Students will notice the large amount of “~~plastic~~ litter” in their immediate surroundings.

**Michigan Standards:**

II.1.4. Develop an awareness and sensitivity to the natural world.

III.5.2. Explain common patterns of interdependence and interrelationships of living things.

**Concepts:** Cause and Effect

**Materials:** Pictures of several types of wildlife (water and land)

Markers, crayons, pencils, colored pencils

Paper

Garbage bag full of several types of ~~plastic~~ (any) garbage

Chart to show litter found outside, which is dangerous, etc.

Four extra garbage bags (empty)

Book: One Less Fish

Day 1

ENGAGE

(10 Minutes)

Classification, Communicating: I will give students ten to fifteen photographs of several types of wildlife. I will let them work as a group of approximately four to five students. I will tell them to classify\*\* the pictures in any way that they can. Then, as a complete group we will (walk around the classroom as you please to observe or take mental notes) at how the students sorted the pictures and what pictures lie in each group. I will have each group explain how they chose to classify the pictures (student-centered discussion: allow other groups to say how they classified theirs the same or different). We will also discuss what a good environment would be for these animals and what would be harmful. \*\*NOS/Process: Allow students to walk around to observe how other groups sorted/grouped their photographs. This will allow for a better discuss to take place among students because they were able to compare and contrast how each group classified their wildlife. Science is social and by allowing students to walk around the room and take notes/observe each others ideas, students socially interacting and connecting to get different ideas than what they had. The modification to this activity is similar to our “seidnacs” activity.

\*\*Process Skill: explicitly teach what classifying is.

EXPLORE

(20 minutes)

Hypothesizing, Classifying : I will tell students that today we will discussing aquatic wildlife. I will hand over to them, in the two groups that they were in for the previous activity, two garbage bags full of ~~plastic~~ (polluted) items. I will ask students to take out and examine all objects. Then, I will have them discuss, in their groups, how these objects relate to aquatic wildlife. After hearing their responses I will instruct students to sort their plastic materials ~~into three groups looking at how animals would perceive the plastics: Very likely to be considered food, somewhat likely to be considered food, not likely to be considered food.~~ \*\*Content: I’m not a big fan of how the students are instructed to sort their plastic materials. It’s not only plastic materials that get polluted into the ocean and harm marine wildlife. I would put all sorts of pollution/waste into the garbage bags and have the students work on sorting the materials by cardboard, plastic, paper, aluminum and talk about how we can throw away and recycle instead of pollute the ocean and environment we live in. I don’t believe it’s important for students to know just the effects of population of plastics, they should know that all types of materials are bad to put into our ocean. I want my students to understand that pollution is not just plastic and that other materials can cause harm to marine wildlife as well.

Communicating: I will ask the students questions about what they are thinking in regards to the groupings: Why would you think that? Well, what kind of animal would eat that? Do you know what effect it would have on the animal? What causes these ~~plastics~~  (pollutions) to get there? \*\*Content/Process: Since I changed the content, I would ask different questions to get communication in my classroom. I would ask, What effect would this item have on an animal? Why do you think that? Does pollution only occur in the ocean? Where have you seen pollution in our life? What causes these pollutions to get there?

EXPLANATION

(15 minutes)

Predicting: To explain the dangers of wildlife to the students I will read them a story titled, “One Less Fish.” As I go through the story I will ask students questions to make sure they are understanding all of the material and paying attention. The book does not directly address polluting the oceans or other water environments. Therefore, I will be asking students questions that lead them to the answers that I am looking for.

After reading the story I will have students fill in part of their chart that we will complete the next time I am there. I will have them predict how many of each type of plastic they think they would find on their playground.

\*\*Possibly find another book to read besides, One Less Fish. I don’t see how this book is appropriate if it does not directly address polluting in the ocean or other water environments. I’m assuming there are books at the school’s library that teach a lesson about polluting the ocean and if not polluting in general.

\*\* Process Skill/ NOS: explicitly teach what predicting means. Have them record their prediction in their science notebook because science demands evidence and after they have gone out to look on the playground, have them right whether their prediction came true and explain.

Day 2 (disregard/ did not analyze Day 2)

ELABORATE

(30 minutes)

For this part of the lesson I will take the students outside. After they are dressed appropriately I will take them outside. We will start standing in a circle. I will start by reviewing what the students learned the first day. We will talk about the book that we ended with last time. Then I will give students more information about how plastics harm the wildlife. I will tell them:

– Many fishermen lose plastic netting into the ocean. Aquatic wildlife swims into it and have no chance for survival once in the net.

– Leatherback turtles mistake plastic bags for jellyfish.

– Plastics have been found in the stomachs of whales, dolphins, fish, and birds.

Observing: I will put students into groups of two or three. I will tell them that their mission is to stay on the playground, but to find items that would be dangerous to aquatic wildlife, concentrating closely on plastics. They will have five minutes.

Classifying, Communicating: After five minutes has passed we will move indoors. I will have all students dump out their garbage bags. We will then sort the items into the same three piles as we had before. If students have any items that are not plastic I will ask to explain how they think that the items are dangerous to aquatic wildlife.

Measuring: With the items that we find outside students will fill in a chart showing how much of each item they found and see if it is higher or lower than their prediction. I will ask them if they were surprised about what they found and how they think it got there.

EVALUATION

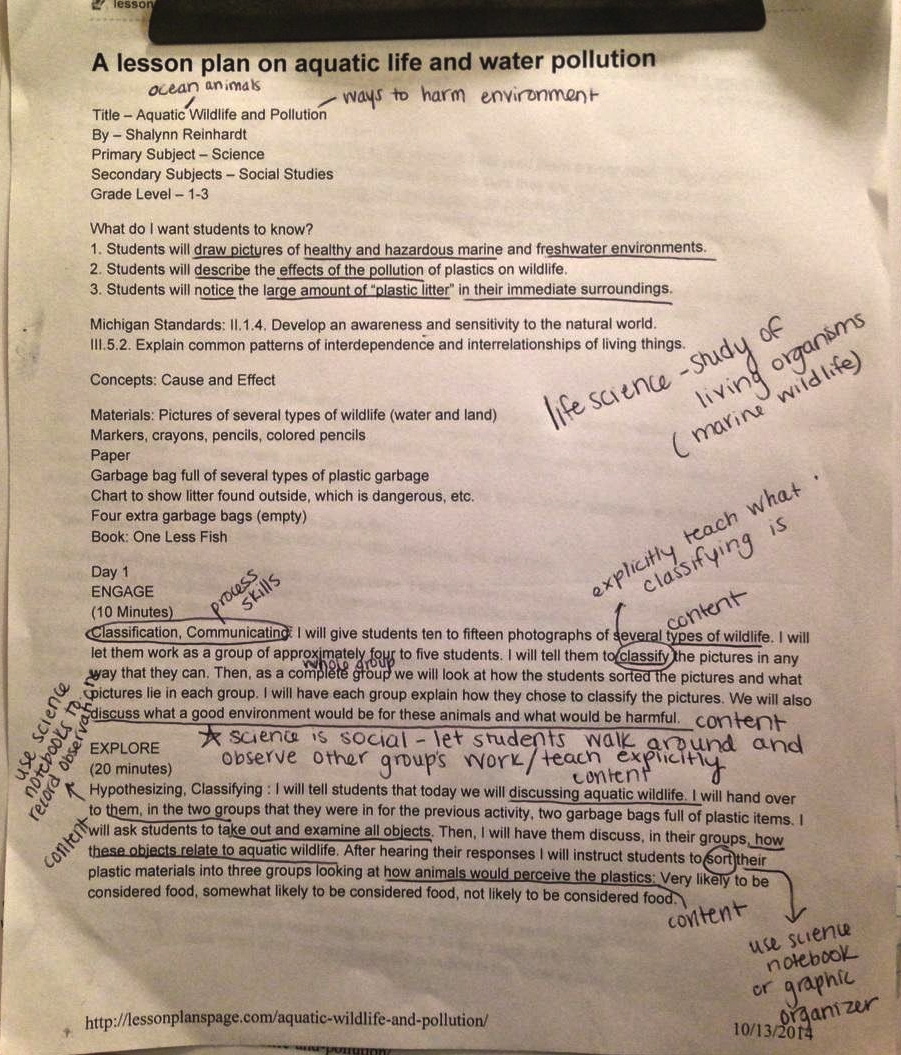
(15 minutes)

For the remainder of the time I will ask students to do several things. I will give them an 8.5in x 11 in. sheet of paper that has been folded in half. On one half I will ask them to draw a picture of what a healthy environment would be for aquatic wildlife. On the other half they will draw a hazardous environment. Then, on the back I want them to write down one small thing they think that they could do to help save our aquatic wildlife. I also want them to write down what causes the plastic pollution in the water and what is the effect of it.

Source: Project Wild: Aquatic

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**Pictures of Making Changes/Modifications to my Lesson Plan:**

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