Problem Based Learning Pond Unit

(The unit was put together collaboratively, but I wrote the field trip lessons.)

Theme: The theme that the lesson plan will revolve around is life in ponds, specifically in local ponds.

Grand Level: 3rd-4th grade

Scenario: You live in a nice house in town, but your parents just got a dog and decided that it is time for a bigger house with a bigger backyard. They found a perfect house a few miles away where you and your siblings will all have their own room and there is a really big backyard. However, there is a pond in the backyard and your parents don't know anything about ponds, and they want to make sure it's a good idea. Your parents don't know what kind of animals live in and by the pond, what plants grown in and near the pond, and what the water is like. They need to know if there are poisonous animals and plants, and they need to know what is in the water in the pond in case your new dog goes and drinks the water.

Driving Question: Can you investigate to let your parents know about what lives in and around ponds?? What plants live in and around ponds? What animals live in and around ponds? What is the water like?? What plants and animals live in our community ponds?

NSES Standards

- NSES1: Organisms have basic needs. For example, animals need air, water and food; plants require air, water, nutrients, and light. Organisms can survive only in environments in which their needs can be met. The world has many different environments, and distinct environments support the life of different types of animals.
- NSES2: Each plant or animal has different structures that serve different functions in growth, survival, and reproduction. For example, humans have distinct body structures for walking, holding, seeing and talking.
- NSES7: All animals depend on plants. Some animals eat plants for food. Other animals eat animals that eat the plants.
- NSES8 An organism's patterns of behavior are related to the nature of that organism's environment, including the kinds and numbers of other organisms present, the availability of food and resources, and the physical characteristics of the environment. When the environment

IL Standards

11.A.2b Collect data for investigations using scientific process skills including observing, estimating and measuring

11.A.2c Construct charts and visualizations to display data.

12.A.1a Identify and describe the component parts of living things and their major functions.

12.A.1b Categorize living organisms using a variety of observable features (e.g., size, color, shape, backbone).

12.B.1a Describe and compare characteristics of living things in relationship to their environments

12.B.2a Describe relationships among various organisms in their environments (e.g., predator/prey, parasite/host, food chains and food webs).

12.B.2b Identify physical features of plants and animals that help them live in different environments (e.g., specialized teeth for eating certain foods, thorns for protection, insulation for cold temperature).

13.A.2c Explain why keeping accurate and detailed records is important.

13.B.2a Explain how technology is used in science for a variety of purposes (e.g., sample collection, storage and treatment; measurement; data collection, storage and retrieval; communication of information).

13.A.2b Explain why similar investigations may not produce similar results.

13.A.2c Explain why keeping accurate and detailed records is important.

13.B.2a Explain how technology is used in science for a variety of purposes (e.g., sample collection, storage and treatment; measurement; data collection, storage and retrieval; communication of information). 12A. Know and apply concepts that explain how living things function, adapt and change.

- . **13.A.1a** Use basic safety practices (e.g., not tasting materials without permission, "stop/drop/roll").
- **13.A.1c** Explain how knowledge can be gained by careful observation.
- Final Assessment
- ٠

Pond Unit Overall Assessment

Science Journals Science Journal Science Journal Science Journal is Sc	
Includes all of the necessaryIncludes most of the necessaryInissing some of missing some of the necessarynecessarythe necessarythe necessarysubstantia responses from throughout the unit. Sciencesubstantia responses from throughout the unit. Sciencemissing some of the necessary responses from unit. Sciencejournals are neat and includejournals are pretty neat and includeunit. Science sloppy and includeunit. Science throughout unit. Scienceinclude pictures, and predictions.neat and include predictions, butsome thoughtful predictions, butunit. Science mostly thoughtful	ournal is al f the f from ut the nce re sloppy esponses d and not ght out.

Oral Presentation	Students show full understanding of topic, work well in group, and create a well thought out and creative mural.	Students show they mostly understand the topic, they usually work well in group, and create a well thought out and creative mural.	Students do not fully understand the topic, they have some trouble working in group, and they create a mural that is lacking creativity and effort.	Students do not understand the topic, they do not work well in group, and their mural is sloppy and lacks effort and creativity.
Field Trip	Students behaved well and safely on the field trip, completed their investigation report, and collected the necessary samples.	Students behaved well and safely on the field trip with some reminders, they mostly completed their investigation report, and collected the necessary samples.	Students needed to be reminded several times to behave well and safely on the field trip, they were missing some information of their investigation report, and was missing some of the necessary samples.	Students did no behave well and safely on the field trip, they did not complete their investigation report, and did not collect the necessary samples.

Lesson Plan 1: Introduction

- The first lesson will include an introduction to ponds using the scenario and driving question.
 - Ask students what they already know about ponds. Use this as a tool to discover what your students already know about ponds. Use this to generate discussion.
 - Students will watch a video about ponds, specifically in the climate that they live in. It will be a good introductory movie for the students. In their science journals, students should write at least 3 things they learned from the video and 3 questions they have about ponds after watching the video. After the video, have a class discussion about what they learned, and what questions they still have about ponds.
 - A tadpole will be used as an attention getter and to introduce students to some of the animal life found in our local ponds. Tell the class we'll watch how the tadpole grows in our tank in order to understand some of the amazing life changes that happen underneath the water. Students will need to have prerequisite knowledge of basic plant and animal functions and needs. Give a brief overview of what they have already learned about plants and animals, and tell them that they will be investigating the mysterious world of ponds and how plant and animal life interact and live in this specific environment.

Lesson Plan 2: Initial Visit to the Pond

Lesson Plan Creator: Elise Heiting

Title: Observations at our local pond!

Grade Level: 3rd-4th grade

Prerequisite Knowledge:

- Students have watched the video on the first day of the unit and have been told they will study ponds for the next few weeks
- Students have learned about basic plan and animal life. They have learned vital needs for plants and animals.
- Students have learned about different groupings of animals (birds, mammals, amphibians, reptiles, fish, etc.)
- Students have learned that ponds are a unique ecosystem where living and non living things interact

Field Trip Prep

- Teacher must get permission for class to go on field trip with school principle
- Teacher must decide which pond to use for the whole class investigation
- Teacher must figure out transportation for students (would be best to find a local pond to walk to, but a bus may be needed)
- Teacher must get permission slips for students to sign
- Teacher must recruit parent volunteer chaperones and any school personnel (aids) as needed
- Students must be reminded of special attire that needs to be worn for the day of the field trip (included in parent newsletter as a reminder)
- Must have a plan for bad weather and a rescheduled date

<u>Time:</u>

2 hours total

- Explanation of expectations, rules, and activities while on the field trip in the classroom -20 min
- Loading/unloading/transportation time- 40 min (bus or walking)
- Observation Time: 30 min
- Discussing pond observations in the classroom: 30 min

Objectives:

- Students will make open ended observations at the pond
- Students will observe, interact, and investigate plant and animal life in a local pond
- Students will develop inquiry based questions about pond life that they will answer in future class periods
- Students will begin to develop ideas for their group investigation plans
- Students will use critical thinking skills to complete their observations

Standards:

NSES

- NSES1 Organisms have basic needs. For example, animals need air, water, and food; plants require air, water, nutrients, and light. Organisms can survive only in environments in which their needs can be met. The world has many different environments, and distinct environments support the life of different types of organisms.
- NSES8 An organism's patterns of behavior are related to the nature of that organism's environment, including the kinds and numbers of other organisms present, the availability of food and resources, and the physical characteristics of the environment. When the environment

Illinois State Standards

- **11.A.1a** Describe an observed event.
- **11.A.2b** Collect data for investigations using scientific process skills including observing, estimating and measuring.
- **12.A.1b** Categorize living organisms using a variety of observable features (e.g., size, color, shape, backbone).
- **12.B.1a** Describe and compare characteristics of living things in relationship to their environments.
- **12.B.1b** Describe how living things depend on one another for survival.
- **12.B.2a** Describe relationships among various organisms in their environments (e.g., predator/prey, parasite/host, food chains and food webs).
- **13.A.1a** Use basic safety practices (e.g., not tasting materials without permission, "stop/drop/roll").
- **13.A.1c** Explain how knowledge can be gained by careful observation.
- **13.A.2c** Explain why keeping accurate and detailed records is important.

<u>Materials</u>

- Permission slip
- Parent chaperones/school aides as needed
- Transportation
- Reminders about field trip in newsletters
- Individual Materials Needed that students bring to school
 - Closed toe shoes
 - Long pants
 - o Hat
 - o Sunscreen
 - Sack lunch
 - Water bottle
 - Bug spray
 - o hat
- Clip boards for each student
- Open ended Observation Recording Sheet
- Writing utensil for each student
- Hand sanitizer for after pond activities

<u>Procedure</u>

In the Classroom

- Students will be informed during the introduction to ponds lesson that they will be going on two field trips to their local pond. The students will be explained that the first trip will be for them to make observations and write down questions at the pond. They will also get ideas for a group investigation they will conduct. After the initial visit to the pond, they will get with their science group and create an investigation to carry out at the pond on the next visit. As a group, they will work as real scientists to carry out their personally created investigation. they will be creating their own investigation to execute at the pond we visited a few weeks ago. Students will have permission slips signed and newsletters will go out to parents letting them know that they will need proper attire for the pond investigation and a sack lunch
- Students will come to school and sit in science groups
- Once everyone is seated and parent chaperones are present, go over the plans for the day. Tell the students
 - "Today we're going on our Initial Pond exploration field trip! We will be making scientific observations and asking scientific questions. You will be given a sheet to make observations, create drawings, and ask questions while at the pond. This will be individual work. Remember, that you will be visiting the pond again in a few weeks. On that visit, you will be executing a real investigation that you and your science group created, so start to think of ideas at the pond!
 - It is your job to complete your observation report on your own while at the pond.
 When you get back to school after the field trip, you will write a reflection about your observations about the pond in your science journal. You will write about what you learned from just your observations, and what you hope to still learn.
 - When we get to the pond, everyone must stay together and wait until you are told to go to the pond. You will not be able to participate in the field trip activities if you run down to the pond without waiting for instruction. There is absolutely no swimming or going into the pond. These activities or horseplay around the pond and off task behavior will not allow you to do the investigations, and you'll be asked to not participate."
- Pass the tadpole aquarium around again and instruct students to think about him when they are looking at the pond. Tell the students that this is a reminder that even though they may not be able to see what is going on underneath the water, that there is a lot of life below the surface
- Remind students that pond life is not just in the water. It is the sky above the pond, in the weeds along the banks of the pond, and in the grass all around.
- Make sure to remind students to apply sunblock, bug spray, and to drink plenty of water in the sun.

At the Pond

- At the pond, make sure that all students wait for instructions before going to the pond.
- Make sure that all students have their materials and that they understand their expectations for the day. Reiterate safety tips and to remind students to not take water samples without an adult present. Remind students that they may get close to the water for observations, but to be very careful.
- Tell the students that this is their opportunity to be real scientists and to learn about science the best way they can—by doing real observations in the ecosystem.
- Let the students know how long they have, and where to meet for lunch. An announcement will be made where there is 20 min, 10 min, and 5 min left. If they hear the whistle, it means they need to look up and find the teacher.

- Encourage students independently carry out their observations at the pond. Check in with individual students and encourage critical thinking questions and see if they need help with any of their observations .Ask probing questions to see about their conceptions of pond life. Encourage chaperones to do the similar thing. Make sure to watch students as they go close to the water and to make sure they are being safe and not horse playing.
- Bring everyone back together and make sure students have had enough time to record their observations on their observation report.

Back at the Classroom

- Tell students to take about 10 minutes to write in their science journals a reflection about their day at the pond. On the board, write some prompting questions such as:
 - What observations did you make at the pond that surprised you?
 - What observations did you make at the pond that did not surprise you?
 - What are some questions you now have after visiting the pond?
 - Create a hypothesis, or a prediction of what you think the answer is to one of your questions. It can be wrong!!
 - Write where you think you can find the answers to some of your questions.
 - What would you like to learn more about with ponds?
 - Write down some of your ideas for an investigation you can carry out at the pond next time you visit.
 - What was the coolest thing you saw at the pond today?
- Ask students about their experience at the pond. Ask students to share some of their responses to the questions asked in their reflection
- Tell students to turn in open ended observation reports for teacher to check and to see what questions they still have. They will go over the observation reports next science class.
- Tell students that they will work as groups to work on creating an investigation that they will carry out like real scientists at their next visit to the pond.
- Thank class for cooperation and good behavior at the pond (seeing that there was good behavior represented)

Open Ended Observation Report Sheet

(The actual sheet would have space for answers)

Open Ended Observations at Our Local Pond

Welcome to the pond! This is a unique ecosystem that you can find all over our community. Today, you're going to get to know the pond by making observations and asking questions.

- Create 2 drawings of what you see around the pond. It can be anything you want, but make sure to label what you are drawing. (ex. A fish in the pond, the whole pond, a plant, etc.)
 - 1.)
 - <u>2.)</u>

- Record 5 observations while at the pond. Observations should be at least 3 sentences about what you see, hear, feel, and smell. Make sure to use all senses and observe different areas of the pond. Make observations about both plant and animal life. Make sure to look to see if anything looks unsafe so you can let your parents know about ponds.
 - <u>1.)</u>
 - <u>2.)</u>
 - <u>3.)</u>
 - <u>4.)</u>
 - <u>5.)</u>
- Ask at least 4 questions based on your observations that you are stumped by or that you want to further explore.
- <u>1.)</u>
- <u>2.)</u>
- 3.)
- <u>4.)</u>
- Write down 2 ideas for investigations that you and your science group can create at your next visit to the pond.
- <u>1.)</u>
- <u>2.)</u>

Lesson Plan 5: Field Trip to a local Pond

Lesson Plan Creator: Elise Heiting

Title: Investigations at our Local Pond!

<u>Grade Level:</u> 3rd-4th grade

Prerequisite Knowledge:

- Students have learned about basic plant and animal life. They have learned vital needs for plants and animals.
- Students have learned about different groupings of animals (birds, mammals, amphibians, reptiles, fish, etc.)
- Students have learned through online activities about plant life in ponds
- Students have learned through online activities about animal life in ponds
- Student have had an initial visit to the pond where they have made observations and asked questions about the ponds.
- Students have designed their investigation and research question in a previous class

- They have planned out their investigation and have materials ready to carry out the investigation they created
- Teacher has gone over investigation plan with the students and has prepared specific materials for the investigation

Field Trip Prep

- Teacher must get permission for class to go on field trip with school principle
- Teacher must decide which pond to use for the whole class investigation
 - Teacher must go to pond in advance to observe plant and animal life and to collect water samples in order to create lesson for the field trip and for the observations activity (Lesson Plan #4)
- Teacher must figure out transportation for students (would be best to find a local pond to walk to, but a bus may be needed)
- Teacher must find a place for students to have picnic lunch
- Teacher must get permission slips for students to sign
- Teacher must recruit parent volunteer chaperones and any school personnel (aids) as needed
- Students must be reminded that they need to bring a sack lunch the day of the field trip several times before the field trip (included in parent newsletter as a reminder)
- Students must be reminded of special attire that needs to be worn for the day of the field trip (included in parent newsletter as a reminder)
- Must have a plan for bad weather and a rescheduled date
- Students must understand and understand their procedure for their own investigation with their group
- Students have written up the investigation and submitted it to the teacher to have it reviewed and approved

<u>Time:</u>

1 hour class period the day before the field trip

4 hours total for actual field trip

- Explanation of expectations, rules, and activities while on the field trip in the classroom -15 min
- Loading/unloading/transportation time- 30 min (bus or walking)
- Actual investigations Picnic lunch/playing at a nearby park (if no park, perhaps bring a ball to play kickball) 2 hr
- Organizing pond artifacts and discussing investigation findings back at school- 15 min

Objectives:

- Students will use observations and questions from initial pond visit to collaboratively make a field guide
- Students will observe, interact, and investigate plant and animal life in a local pond
- Students will effectively execute the investigation they created in class at the pond
- Students will work collaboratively in a group to accomplish their investigation
- Students will use critical thinking skills to complete their Pond Investigation

• Ex. Draw what they think underwater looks like

<u>Standards:</u>

NSES

- NSES1 Organisms have basic needs. For example, animals need air, water, and food; plants require air, water, nutrients, and light. Organisms can survive only in environments in which their needs can be met. The world has many different environments, and distinct environments support the life of different types of organisms.
- NSES8 An organism's patterns of behavior are related to the nature of that organism's environment, including the kinds and numbers of other organisms present, the availability of food and resources, and the physical characteristics of the environment. When the environment

Illinois State Standards

- **11.A.1a** Describe an observed event.
- **11.A.2b** Collect data for investigations using scientific process skills including observing, estimating and measuring.
- **12.A.1b** Categorize living organisms using a variety of observable features (e.g., size, color, shape, backbone).
- **12.B.1a** Describe and compare characteristics of living things in relationship to their environments.
- **12.B.1b** Describe how living things depend on one another for survival.
- **12.B.2a** Describe relationships among various organisms in their environments (e.g., predator/prey, parasite/host, food chains and food webs).
- **13.A.1a** Use basic safety practices (e.g., not tasting materials without permission, "stop/drop/roll").
- **13.A.1c** Explain how knowledge can be gained by careful observation.
- **13.A.2c** Explain why keeping accurate and detailed records is important.

Materials

- Permission slip
- Parent chaperones/school aides as needed
- Transportation
- Reminders about field trip in newsletters
- Individual Materials Needed that students bring to school
 - Closed toe shoes
 - $\circ\quad \text{Long pants}$
 - o Hat
 - o Sunscreen
 - Sack lunch
 - o Water bottle
 - Bug spray
 - o hat
- Clip boards for each student
- Field guide for each student
- Students group investigation write up and investigation plan

- Materials specific to students investigation plan (if needed)
- Writing utensil for each student
- Hand sanitizer for after pond activities and before lunch

<u>Procedure</u>

Day before field trip- creating field guide

- Ask students to take out their observation reports from their initial visit to the pond and to take out their science journals. Tell students to find their reflection from the initial pond visit. After this, tell students
 - "Tomorrow we are going back to the pond to carry out your investigations! Along with carrying out your investigations, you and your group will complete a scientific field guide to better explore the pond. The field guide will tell you and your group what to look for, what samples to collect, and what investigations you want to conduct. Take a few minutes to look over your observation reports and to talk with your group members about what you want to be a part of the field guide. You all will determine what we are going to look for and investigate at the pond. A good place to get ideas of what you may want to look for and investigate more is the questions you asked on your investigation report. "
 - Wait a few minutes for students to look over reports and to discuss with science groups.
- Bring group back together and get ready to take notes on the white board, smart board, or overhead. Call on each group for suggestions for things they wanted to look for at the pond. Create a list of the board. Then go around for a second round, and see if there are any extra ideas.
 - Do the same for samples they want to collect.
 - Do the same for simple investigations (there can only be a few of these since they will be carrying out their own investigations as well.)
- Compile all of the ideas of the students into a field guide that the students will complete on the day of the field trip. Add in any missing information or activities/investigations/sample collecting you want them to look for that isn't already included. This way students are looking for things they are interested in.
- Type a copy of the completed field guide for each student. Students will bring their own investigation report for the investigation their group is going to carry out at the pond.

In the Classroom- day of field trip

- Students will be informed that they will be creating their own investigation to execute at the pond we visited a few weeks ago. They will have had time to create an investigation with their group before going to the pond for the second time. Students will have permission slips signed and newsletters will go out to parents letting them know that they will need proper attire for the pond investigation and a sack lunch
- Students will come to school and sit in science groups
- Once everyone is seated and parent chaperones are present, go over the plans for the day. Tell the students
 - "Today we're going on our Pond exploration field trip! We are doing real live investigations that you and your group created about the plants and animals that live in

our local ponds. With your science groups, you will work together to discover new things about the pond through your research questions and investigation plan. You will also be completing the field guide that you all worked hard to design yesterday in class!

- It is your job to complete your Pond investigation and field guide with your group members. When you get back to school after the field trip, you will write a reflection about your group's investigation at the pond. You will write about what you learned from your investigation, if you discovered anything new, if you were surprised by anything, if your hypothesis turned out to be true, etc. Think about these questions while you are at the pond. The questions at the end can be answered when you get back, but make sure you think about questions before hand in order to be able to answer them and to start talking about them with your group members at the pond.
- When we get to the pond, everyone must stay in their groups and wait until you are told to go to the pond. You will not be able to participate in the field trip activities if you run down to the pond without waiting for instruction. There is absolutely no swimming or going into the pond. These activities or horseplay around the pond and off task behavior will not allow you to do the investigations, and you'll be asked to not participate."
- Give general advice for their investigations. Tell students,
 - If your group's investigation calls for taking water samples, make sure that you have me or a chaperone with you while collecting the water sample.
 - If your investigation calls for collecting, plant samples, , PICK AS FEW PLANTS AS POSSIBLE! It is fine to pick one of a few different species of plants, but do not up root an entire area of plants. This is bad for the local pond environment, and we want to be good scientists and not disrupt pond life.
 - I will be there along with all of the questions so you can come to us with any questions that you have as long as you have asked all of your group members first and they are all stumped as well."
- Pass the tadpole aquarium around again and instruct students to think about him when they are looking at the pond. Tell the students that this is a reminder that even though they may not be able to see what is going on underneath the water, that there is a lot of life below the surface. Tell students to think about the plants and animals they investigated in their online activities, and how they interact below and above the water.
- Tell students to observe the questions they created on their initial pond investigation and the questions they created while watching the movie. Tell students to make a list of 5 questions they have asked throughout the unit to try and answer individually while on the 2nd visit to the pond
- Make sure to remind students to apply sunblock, bug spray, and to drink plenty of water in the sun.

At the Pond

- At the pond, make sure that all students wait for instructions before going to the pond.
- Make sure that all students have their materials and that they understand their expectations for the day. Reiterate safety tips and to remind students to not take water samples without an adult present. Remind students that they may get close to the water for observations, but to be very careful.

- Tell the students that this is their opportunity to be real scientists and to learn about science the best way they can—by actually carrying out their self created investigations and observing and recording the real science.
- Let the students know how long they have, and where to meet for lunch. An announcement will be made where there is 1 hour left, 30 min left, and 10 min left. If they hear the whistle, it means they need to look up and find the teacher.
- Allow students to engage with their group members and the pond independently. Check in with every group and encourage critical thinking questions and see if they need help with any of their investigations. Ask probing questions to see about their conceptions of pond life. Encourage chaperones to do the similar thing. Make sure to watch groups as they go close to the water and to make sure they are being safe and not horse playing.
- Monitor each group's status while carrying out their investigation. If it seems that one of the investigations is too difficult to carry out at the pond, assist students in creating adaptations to the investigation to collect data on the trip
- After students have finished their investigations and collected all of their samples, instruct them to go to the nearby designated picnic area. Students will place their paper bag full of samples (with all of them labeled with group name) in a designated area and use hand sanitizer before having lunch. Allow students to have free time at the park for a about 20 minutes after lunch.
- Bring everyone back together and make sure all trash is picked up and that their samples are all together. Have everyone do one last look at the pond to get a good image of what our local ponds are actually like.

Back at the Classroom

- If students collected samples, have students place their samples in a designated spot in the room
- Tell students to get with their groups and to discuss look at their initial investigation On the board, write some prompting questions such as:
 - Did your investigation go as planned?
 - What obstacles did you and your group encounter while trying to perform your investigation?
 - Did you find your predictions were correct?
- What surprised you from your investigation? Have students write for about 7 minutes
- Ask students about their experience at the pond. Ask students to share some of their responses to the questions asked in their reflection
- Tell students to turn in their investigation write up and investigation report for teacher to check and to see what questions they still have. They will go over the investigation reports next science class.
- Tell students that they will work as groups to use the results of their group investigations to teach the rest of the class about their experiment and findings at the pond.
- Thank class for cooperation and good behavior at the pond (seeing that there was good behavior represented)

<u>Assessment</u>

Field Trip Rubric

Student Name:

CATEGORY	4	3	2	1
On task and good Behavior	Students stayed on task the whole time at the field trip and exercised safe behavior. Students worked together to collectively complete investigation report. Students did not be reminded to exercise good behvior.	Students stayed on task most of the time at field trip and exercised safe behavior. Students worked together to collectively complete investigation report. Students needed to be reminded only once to stay on task and exercise good behavior.	Students stayed on task some of the time at field trip and needed to be reminded to exercise safe behavior. Students had some trouble working collectively complete investigation report. Students needed to be reminded several times to stay on task and exercise good behavior.	Student needed to pulled from field trip at some point because of distracting other students and being unsafe. Student had difficult time staying on task and being safe and on good behavior.
Investigation Report	Investigation Report came back completely and with each question fully answered. Effort and thought was put into responses.	Investigation Report came back mostly completed with each question mostly answered. Students put thought and effort into answers, but are missing a few important aspects.	Investigation Report came back with some questions not answered and key components of the report missing. The report needs to include more thought and effort.	Investigation Report came back significantly incomplete. The answers that were answered were answered without much thought and effort.
Field Guide	Investigation Report came back completely and with each question fully answered. Effort and thought was put into responses.	Field Guide came back mostly completed with each question mostly answered. Students put thought and effort into answers, but are missing a few important aspects.	Field Guide came back with some questions not answered and key components of the report missing. The report needs to include more thought and effort.	Field Guide came back significantly incomplete. The answers that were answered were answered without much thought and effort.