Morgan- purple // Gili- blue //

SMT3664 5E Lesson: L2 Writing a Lab Report

Name of Lesson	**Writing a Lab Report**
Author of lesson (UFTeach Student):	Morgan Newbold Gili Omer
Sources used to compose lesson:	https://www.nextgenscience.org/ ; https://www.cpalms.org/public/search/Standard#
Intended Grade level of students	PIB Chemistry / 9th-10th grade
Summary of STEM concepts: *including any terms you want students to know*	*This section should align with the standards you select for the lesson- the idea is to share the language you plan to use as you teach these concepts so we can check to see that it's age appropriate and will not promote misconceptions* Table of contents Title page Introduction Materials Methods/procedures Results Discussion Conclusion
Materials Needed	*Don't forget to share ***commenting*** permissions for all docs and slides with UFTeach@gmail.com* Meme template and article questions: https://docs.google.com/document/d/1VJNc6fu40l9pwv23jXxwVBzTWlzLZiY5zk_2CIP8TmE/edit?usp=sharing Lab report setup: https://guides.libraries.indiana.edu/c.php?g=992698&p=7182653 Example lab report: https://www.studocu.com/en-us/u/2847148?sid=01666631632 Article (an excerpt from 65 Short Mysteries You Solve With Science! By Eric Yoder)

NGSSS / MAFS Standards: Include at least one MATH or SCIENCE content standard (in addition to Nature of Science or Mathematical Processes)

Call Letters	Standards
	See the CPALMS standards for this lesson, select one -three grade level appropriate standards that you will use to guide your lesson planning.
WL.K12.SU.5.3	Write a report based on conducted research summarizing the opinions of others, and analyzing information and facts.
SC.68.CS-CP.1.2	Select and use data-collection technology (e.g., probes, handheld devices, geographic mapping systems and output from multiple runs of a computer program) to gather, view, organize, analyze, and report results for content-related problems, individually and collaboratively.

	Student Learning Objectives
1.	Students will learn how to organize data in a lab report.
2.	Students will learn to use claim evidence and reasoning to explain scientific events.
3.	Students should be able to communicate findings with peers and compare data
4.	Students should understand that the importance of a lab report is to communicate lab results and understand a way to replicate those results

Engage: *How will you invite students into the lesson, access prior knowledge, get them excited?*

***Time:** 7 minutes*

Goal	What you will say / do	Expected student responses / each instructors actions
Ice Breaker/ Get to Know you Question 5 minutes	We will introduce our ice breaker, what do you meme. Before class, we will post some famous meme reaction pictures around the classroom. Then, we will ask everybody to stand by whatever their favorite picture is. Everyone will have a sticky note and will tape a meme caption relating to the picture they chose. Then, we will go through and read them as a class. Attached pictures in document in materials. Go through and have each student read	We should remind the students that whatever they write should be school appropriate. Students will be engaged and will hopefully have fun. Instructors will help pass out sticky notes and keep track of students who have and haven't shared yet to make sure everyone has a chance to be involved.

	what they wrote on the sticky note, and if they couldn't come up with anything, ask them why they chose that meme to go to.	
Activate prior knowledge 2 minutes	Present objectives to the students: we will learn to write a lab report today. We will go through some of the material that they covered in their density lab yesterday. We will talk about some of the data they collected and why it was relevant. Our goal in this lesson is not to study density, but to study how to properly perform and write out a lab.	Talking about the lab with students is a good way to jog their memory and getting them thinking back into science mode again. While talking with students, we may discuss as a class the different topics of a lab report, such as the materials they used, without them realizing that we are talking about the parts of a lab report yet.

Explore: *How will you organize student activities and thinking as they explore the STEM concepts in this lesson?* ***BE SPECIFIC in how you will provide structure to the exploration (what will students be doing at each step)***

Time: 10* minutes

Goal	What you will say / do	Expected student responses / each instructors actions
Concept Share (5 minutes)	After talking a little bit about their density lab, We will go over the parts of a lab report. I will ask if anyone can name parts of a lab report or what they think is important to be included in the lab report to clearly communicate findings from lab. As each part of the lab report is named or brought up, discuss with students to reason why they think that part would be important to be included in the report. Emphasize to students that the purpose of a lab report is to communicate findings from experiments with other peers clearly and offer a way for the experiments to be repeated in the future.	As students and I talk about the parts of the lab report, write each part on the board and try and keep it in order. This will kind of gives them a beginning template so they know what a lab report looks like.
Give students opportunities to explore concept in grade appropriate ways (5 minutes)	Give each student a copy of the short article and have them read it. After reading it, students should work in groups of 2-3 to answer the questions I have given them. The first question is, what went wrong here? Have students write a sentence response about why the brother and sister were in disagreeance. Then have students correct the	Students should be working quietly and on task with their partners to complete the questions after reading the article. The instructor will be walking around to each group to make sure students are understanding the task and

	problem. What should the sister of left her brother so that he can take care of the plant the same way she does? Ask students to be very specifi about what she should have included in her list. Potential articles that I found: "Daisuke, don't forget to water my plant while I'm gone!" his sister Miyu reminded him as she left the house. Daisuke had agreed to take care of Miyu's plant during the weeks that she would be away on a concert tour with her high school chorus. She kept the plant inside their screened-in porch, where it got sunlight, but not rain. She had told her little brother it needed to be watered regularly in the hot summer weather. Daisuke got a spray bottle and sprayed the leaves every day. After a few days, he wanted to prove to his sister that he had been taking care of her plant, so he asked his mother to send her a picture of the plant with the sprayer he used next to it. That night when Miyu called she asked to talk to Daisuke. "That plant looks droopy," Miyu said. "Are you sure you're taking care of it?" "I water it every day," Daisuke said defensively. "Dad, could you help Daisuke with the plant?" Miyu asked when their father took the phone from Daisuke. "I haven't been watching him," their father said. "What do you think he is doing wrong?" "I don't think he's giving it enough water," Miyu said. Their father went out on the porch with Daisuke and checked the soil. It was almost completely dry. "You're right," their father said before he handed the phone back to Daisuke and went to the kitchen to get more water for the plant. "What did I do wrong?" Daisuke asked Miyu on the phone. Provide a list of plants for the students to go through and use CER to determine which plant is the one dying. . We can also just write some more info telling them some facts about different plants/their growing conditions.	coming to appropriate conclusions. Print out this article and hand out to every student before class starts.
Students share activity	We will talk about the activity and the conclusions they came to as a class	Students will share their group work and we will use formative assessment to see what the students came up with regarding CER and lab categories.
Present -- challenge to students (This will be saved for the last 15*	Considering what we talked about and went over as a class, the students should understand the parts of a proper lab report and why each step is important. Students should also understand after the activity what	Remind students that while they can work with their lab partners to complete the lab report, they should each produce their own individual work. There is no

minutes of class time)	information should be included into each part of a lab report. Now students will be expected to use what they learned in class to write their own lab report on the lab they did on density. They will be able to work in their lab groups or with their partners to complete the lab report. The challenge is the students doing their own lab report.	copying and lab reports between partners will not be exactly the same.

Explain: *How will you help students make sense of the experiences they had in the exploration?* ***Include examples of the specific questions you will ask)***
Time: ***8 minutes Morgan***

Goal	What you will say / do	Expected student responses / each instructors actions
Students make sense of the activities they have done, formulate a definition of relevant terms and apply their knowledge to answer questions (8 minutes)	We will go over the activity with the article as a class and discuss students' different answers to the questions they were given. Now ask students, why is a lab report so important? Talk about the importance of a lab report and write on the board each step the lab report should have in order to clearly communicate with peers about how to replicate an experiment or process. We set up all the formal categories in their lab notebook, starting with a table of contents, a lab title and page numbers. Next is introduction, materials, results, discussion and conclusion. In the discussion section, emphasize the importance of claim evidence and reasoning. Do not fill out all the categories with the students, but set them up. A proper lab setup is linked in the materials.	Each group will be expected to share at least one answer they got or be able to explain why they thought the answer they got was important to a lab report. Students will get started on analyzing the lab they did yesterday in the format of a lab report

Elaborate: *How will you connect this experience with other ideas or real world applications?*
Time: ***10 minutes gili***

Goal	What you will say / do	Expected student responses / each

		instructors actions
Students expand their thinking to include real world applications or more complex tasks (5 minutes)	Focus on the CER method for supporting ideas and claims. Use basic examples, such as one rock being bigger than another rock, to show students why CER is a good method to use to make their arguments and claims seem stronger as they offer more reasoning and support behind those claims.	They will understand the importance/meaning of claim, evidence and reasoning in a lab. Instructors should continue to go around the room when not instructing to make sure students are staying on task and understanding the material.
Students should be able to connect what they learned about lab reports to their daily lives …. (3 minutes)	Show a real lab report; print out one copy for the class and have the students either use their phones to take a photo or use the copy that we asked Mr. G to upload to his canvas in reference when making their own lab report. https://www.studocu.com/en-us/u/2847148?sid=01666631632 Focus on the setup, not the content. As seen from the activity where the brother was left to water his sister's plant but he was doing it wrong, the lab report could informally fit into any similar situation a student might have. Say you want to make cookies just like your mom used to make. Well, how did she do that? Hopefully she has a recipe with instructions and an ingredients list somewhere so you can replicate how she makes cookies.	Students will see a real application of a lab report and they'll be able to match up their own report (that they'll fill up later on) with this prewritten report.
Last remarks (2 minutes)	Ask students if they have any questions and pass out note cards as exit slips: the exit slips will ask the students to recall what they think is the most important part of a lab report and why.	Students will reflect on what they had done earlier today, and we will use this as an opportunity for formative assessment and exploring what they got from the lesson. After making sure nobody has any questions, instructor will collect the

	Make sure students don't have any questions about what is expected from them in their lab report. Even suggest that they take a picture of the white board or write down the parts of the report if they don't already have it somewhere else so they can continue to work on it at home.	exit slips from students as they leave class for the day.

Evaluate: *How will you assess the extent to which learning goals are met, during / by the end of the lesson?*

Goal	What you will say / do	Expected student responses / each instructors actions
Students have an opportunity to show their thinking about the math & science concepts in the lesson (remember this should be happening at stages throughout the lesson)	Collect the article reports Collect exit slip Walk around during teamwork During this lesson, we will be using formative assessment in the form of group work as well as class discussion. Group work will give me a chance to see everyone's papers and make sure we are on the right track. Class discussions will help make sure we can communicate our reasoning clearly and understand the material that has been presented,	