Math Lesson Plan 1: Data and Graphs
Date: October 15, 2020
Hannah Krebs

Grade: 3rd

Subject: Math

Materials:

- **White board**
- **Marker**
- **Represent Data worksheets**
- **Pencils**
- **Sticky notes**

Technology Needed: None

Instructional Strategies:

- ☐ Direct instruction
- ☐ Guided practice
- ☐ Socratic Seminar
- ☐ Learning Centers
- ☐ Lecture
- ☐ Technology integration
- ☐ Other (list)
- ☐ Peer teaching/collaboration/ cooperative learning
- ☐ Visuals/Graphic organizers
- ☐ PBL
- ☐ Discussion/Debate
- ☐ Modeling

Guided Practices and Concrete Application:

- ☐ Large group activity
- ☐ Independent activity
- ☐ Pairing/collaboration
- ☐ Simulations/Scenarios
- ☐ Other (list)

Explain:

- ☐ Hands-on
- ☐ Technology integration
- ☐ Imitation/Repeat/Mimic

Standard(s)

3.MD.3: Draw scaled picture graphs and scaled bar graphs to represent data sets with several categories.
Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.

Objective(s)

By the end of the lesson students will:

- **Collect, organize, and represent data in written form**
- **Evaluate data and understand characteristics of data to better organize it**
- **Organize data by grouping it into categories**

Bloom's Taxonomy Cognitive Level:

Understanding, applying, analyzing, creating

Differentiation

Below Proficiency: There will be a lot of check-in questions throughout the lesson to ensure these students are not left behind or confused. They will also receive support from their partner during worktime and assistance from teachers if needed.

Above Proficiency: These students will receive check-in questions throughout the lesson and be paired with another student who may or may not be at approaching efficiency. During worktime, they will be checked on every once in a while just to make sure they are on the right track, but should handle their tasks proficiently on their own with their partner.

Approaching/Emerging Proficiency: These students will receive check-in questions throughout the lesson and will be paired with students of varying proficiency. They will be checked on frequently and given assistance by teachers if needed.

Modalities/Learning Preferences:
Auditory:
Instruction, questions, and discussions will be auditory and helpful for these students.

Visual:
There will be helpful definitions written on the board for these students. These students will also be able to see visual representation of grouping during Guess my Rule. They will also see other data representation worksheets done by their peers.

Kinesthetic:
Students will be getting up and moving around the classroom in order to get back to their desks and workspaces for worktime. They will also be walking around the classroom to see other data representation worksheets.

Tactile:
Students will be writing with a pencil to finish their data representations and using sticky notes to write questions or observations on.

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Classroom Management- (grouping(s), movement/transitions, etc.) **Before instruction:** - **Give students a 30 second warning that we are moving onto the next subject.** - **Tell the students to pack up whatever is on their desk, put it in their bins, and sit in the gathering space.** - **Give a 15 second warning that we are moving onto the next subject.** - **Give students a 10 second warning, 5 second warning, and then call any students who are still up to the gathering space.** **During instruction:** - **Students are at voice level 0 unless asking or answering a question.** - **Students are wearing their masks.** - **Students will raise their hands if they have a question and will not talk over each other.** **During worktime:** - **Students are contributing to discussions between them and their partner.** - **Students stay on task.** **During sticky note walk around:** - **Voices level 1.** - **Walking feet.**	**Behavior Expectations- (systems, strategies, procedures specific to the lesson, rules and expectations, etc.)** • **Students are expected to put away their things quickly and nicely.** • **Students are expected to be respectful of each other and wear their masks while in close proximity to each other.** • **Students are expected to sit on the carper criss-cross applesauce** • **Students are expected to work with their partners to finish their data representation sheets.**

Minutes	Procedures
5	**Set-up/Prep:** • **Write Organizing our Data through Grouping on the board** • **Write the Rule underneath this**
15	**Engage: (opening activity/ anticipatory Set – access prior learning / stimulate interest /generate questions, etc.)** • **All right friends! We are going be moving onto a new activity in 30 seconds. Please pack up everything on your desks, your computers and notebooks, and put them in your bins. After you do this, please come to the gathering space (carpet in front of the projector white board)** • **Give 15, 10, and 5 second warnings for transitioning. Allow time for students to sit down.** • **Thank students for putting away their things so quickly.** • **Introduce lesson.** • **"Okay friends. So remember yesterday that we collected data and learned how to organize it with things that are similar?"** • **Give examples from the homework.** • **"Today we're going to learn another way on how to collect data and organize it by grouping."** • **"What do you think I mean by grouping?"** • **Accept one to two answers.** • **"What I mean by grouping, is putting things that are alike in the same group or category. So like, if I wanted to group people in the classroom, I would put all the girls in a group and all the boys into a group. I would put all the girls together, because they're all girls and I would put all the boys together because they're all boys. See how the girls are alike? Not the same, the girls aren't all the same because some have blonde hair, some have brown hair, but they are**

	alike because they're all girls. I could also do this with shirts. So I could group (student names here, depending on what they are wearing) all together because they are wearing short sleeve shorts. I could also organize (student names here depending on what they are wearing) into a group because they have brown hair." ○ Ask students if this makes sense. ○ Accept a few questions or statements. Watch for head nods or looks of confusion. • "Okay, so today, we're going to look at organizing things, or people, into groups because they are alike. To practice this, we're going to play a game called Guess my Rule." • Explain the game. • "So first, we're going to explain what I mean by a rule. So rules are something you listen to, right? Like we have rules in the classroom, no running or no talking when Ms. Weisz is talking, right? In this case, the rule we are listening to today is one that organizes things or people that are alike into the same group." • Write this definition on the board. • "So in my head, I am visualizing something that is going to organize some of us into a group. There are also people in here that WON'T fit in the rule. This means, that they aren't going to be organized into the group under my rule." • "Does this make sense?" ○ Answer student questions. • "I am going to call up some students who are going to stand up here by the board, and we're all going to think very carefully about what we think the rule is. Think about the color of their shirt, the color of their pants, their hair color, or their shoes. If you think you know what the rule is, tell me who else you think should be in the group and I will tell you if you're right. If you're right, someone else gets to join this group because they follow the rule." ○ Ask students if they have any questions. • "First, we're going to have a practice round." • Call up two students up who have brown hair. • "So I have these students up here, and I'm visualizing my rule about them. I'm organizing them into a group because they are alike in some way." • "Can anyone tell me if anyone else belongs in this group? Remember, I don't want you to tell me the rule yet, just if you think you know what the rule is, tell me if anyone else belongs in the group." • Allow students to answer. If they get it right, praise them and tell the students that was exactly it and the group was organized because their hair was brown. • If students do not guess, explain to them the rule. • "I grouped these students together because they all have brown hair. My rule, that I was visualizing in my head and making a picture of, was I am going to group students with brown hair. • "Does this make sense? • Wait for nods or hands. ○ Answer concerns. • "Okay friends. Now we're going to try it again. I'm going to visualize my rule, so something that is going to group certain people together, and you're going to try and figure out what my rule is." • Invite 2 students up who have blonde hair. ○ Ask the students if they can guess what the rule is. • Ask the students who were called up if they can guess who else belongs in the group. • If the students guess correctly, have the students join the group. Sort the students into a group that follows the rule and a group that doesn't follow the rule. ○ Have the students sit down. • "Okay friends, who can tell me what the rule is?" • Reference board as student tells me what the rule is. • "Yes, the rule organizes things that alike into a group." • "What about things that aren't part of the rule? Where do those go?" • Acceptable answers: They aren't part of the rule so they go in a different area. • "Why do you think this game is important? What does it teach us?" • Have the students turn and talk to their neighbor for 30 seconds. • Bring the students back. • Ask the students what they discussed. ○ Accept one or two answers. • "Right. This game taught us how to organize things that are alike into a group." • "So yesterday, we started to make data sets where we wrote a question, collected our data about the question, and then wrote about it. Today, we're going to put into practice the rule we just learned using this data sheet."
5	Explain: (concepts, procedures, vocabulary, etc.)

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	• **"To do this, you're going to finish up your data sheets from yesterday with your partner. We're going to take 15 minutes to do this. When you finish them, you're going to leave them at your desks, and come sit at the carpet.**
	• **"When everyone is at the carpet, I'm going to give you two sticky notes. You're then going to walk around and look at the data sets you just finished. You're going to take one sticky note and write one thing you notice or have a question about the data. You're not commenting on the data you wrote. So Beau and Joe are not going to find their data sheet and write about it, they're going to find Jane and Fran's and write about theirs."**
	• **"Does this make sense? Do we know what we're doing?"**
	  ○ **Accept student answers**
	• **"You're going to comment on two data sheets. Once you have used both your sticky notes up, you're going to come back to me and sit down on the carpet criss-cross applesauce."**
	• **"So just to be clear, you're going back to your workspace with your partner, you're finishing the data sheets from yesterday. Once you finish your sheets, you're going to leave them at your workspace, and come sit on the carpet criss-cross applesauce. When everyone is on the carpet, I'm going to give you two sticky notes. You're going to get up and look at what other people did for their data representations. You're going to write a question or something you noticed about their data sets and you're going to stick it on their paper. Once you put one sticky note on a data set, you're going to find a different data set and do the same thing. Once you put out both your sticky notes, you're going to come back to the carpet and sit criss-cross applesauce."**
	• **"When you do this, you're going to be at voice level one and will use your walking feet."**
	• **"What questions do you have for me?"**
	  ○ **Answer student questions.**
	• **"Okay. You have 25 minutes to do this."**
	• **Send students to their workspaces with voices off and walking feet.**

25	**Explore: (independent, concreate practice/application with relevant learning task -connections from content to real-life experiences, reflective questions- probing or clarifying questions)** • **Students will pair up and finish their data representation sets.** • **When finished, they will make an observation or ask a question about two different data sets.** • **When they are done with their sticky notes, they will come back to the carpet and we will have a discussion.**
15	**Review (wrap up and transition to next activity):** • **Ask these four questions for each representation.** • **"What can you see about the kinds of places where our group likes to_____. (Whatever question is on the data sheet)** • **"What else do you notice?"** • **"What was easy to understand about this representation?"** • **"What questions did you have about this one?"** • **If time allows, ask the following question.** • **"When we learned about the rule, we learned how to group things that were alike. How would you group some of these data sets?"** • **"Okay friends! Thank you for being such good listeners and helping me out. You can now head back to your desks, put away your math packets, clean up your desk area, and line up for recess."**

Formative Assessment: (linked to objectives) **Progress monitoring throughout lesson- clarifying questions, check-**	**Summative Assessment (linked back to objectives)** **End of lesson:**

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in strategies, etc. **Throughout instruction and work time, there will be check-in questions, check-ins during worktime, and turn and talks.** **Consideration for Back-up Plan:**	**Students will be assessed on their questions or observations on the data set. Their written questions or observations should show that they are applying critical thinking skills.** **Students will also be completing two math worksheets from their packet that will assess their understanding of the rule and organizing data by grouping.** **If applicable- overall unit, chapter, concept, etc.:**

Reflection (What went well? What did the students learn? How do you know? What changes would you make?):

Overall, this lesson went well. I managed the transitions between instruction and activities well and I was conscious of noise levels throughout the classroom. These were part of my expectations for the classroom and I made sure to repeat them as necessary which is something I have been working on. The students liked Guess my Rule and they also understood the more important aspect of the game which was learning how to group like data and recognize data that is not under the Rule. They also liked finishing up their representation of data and the discussion we had after class to bring the lesson together. In addition to this, I was mindful of my practicum teacher's advice on calling on students. I made sure to call on a variety of students, but also made sure to come back to students if they raised their hand and then forgot what they wanted to say. This ensured that the students were not "off the hook" and had more time to think about their question or answer to my question.

The students learned how to group like data together and organize it. They also learned how to write some graphs with an emphasis on bar graphs to organize their data. In addition to this, they learned the concept of the Rule which will come up in future lessons and understood it. Their understanding was evident in the worksheets of their math packet. The representations of data they created showed that they understood grouping and organizing their data into categories.

While this lesson went well content, transition, and management wise, there would be a few things I would change about this lesson. One big thing I did not do was plan something for students to do if they got done sooner than I expected. I made the mistake of basing my reasoning on Tuesday when the students first learned about organizing data and it took them longer to organize their data. Accounting for their growth within two days is something I will keep in mind for future lessons. I did adjust this lack of planning in the moment, but did not do it on my own. I asked my practicum teacher what she would prefer the students do and she suggested they start on their math packets. Another adjustment I would make to this lesson would be writing my directions on the board. As I walked around the classroom while students were finishing up their data representations, I would check in on them and monitor their progress. After some of the groups finished their data representations, some of the finished group members began getting up and following me around. This was also a result of my not preparing for students to do something if they finished early. Since the students did not have anything to do, they kept following me around. It was nice that the students wanted something to do rather than using my lack of preparation as an excuse to do nothing or be disruptive to the class. On the day, I also dropped the aspect of students taking sticky notes and placing them on the complete data representations. This gave us more time to go through the data representations as a class and discuss the answers. Additionally, I had each group of students write one observation and one question on data representations to add to the discussion.