Lesson Title: Data and Graphs

Content Area and Grade Level: Math Grade 5

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Brief Description of the Lesson/Unit:

The students will learn to collect and organize data, find and use range, mode, median, and mean, read and make pictographs, single and double bar graphs, line graphs, histograms, stem-and-leaf plots, and line plots.

South Dakota Content Standards:

- **Standard numbers and exact wording**
  5.S.1.1. Students are able to gather, graph, and interpret data.
  5.S.1.2. Students are able to calculate and explain mean for a whole number data set.

- **Unpacked standards (in student-friendly wording)**
  The students will develop survey questions, collect appropriate data, graph the data using pictographs, bar graphs, line graphs, histograms, and stem-and-leaf plots and line plots. They will read and understand what the data means using the graphs. The students will be able to use the data and find the range, mode, median, and mean of each set of data.
Stage 1: Identify Desired Results

1. What enduring understandings are desired?

   Students will understand ways to gather, organize and display data on a variety of graphs, how to read and interpret these data displays and have understanding of range, mean, median and mode. (central tendency)

2. What essential questions will guide this unit and focus both the teaching and the learning?

   1. How do I collect and organize my data?
   2. How and why do I find the range, mode, median, and mean?
   3. What type of graph do I use for my data?
   4. How do I make the graphs?
   5. How do I determine what my horizontal and vertical axes should be?
   6. How do I display my data on the graph?
   7. How do I read and interpret my graph?

3. What key knowledge and skills will students acquire as a result of this unit?

   The students will learn how to collect data and determine the range, mode, mean, and median of their data. They will learn which type of graph to use for their data and how to make pictographs, bar graphs, line graphs, histograms, and stem-and-leaf plots and line plots. Students will learn how to read and interpret their graphs.

4. What prior learning, interests, misconceptions, and conceptual difficulties might be brought to this unit by the students?

   Prior learning - They will have learned how to make tally charts and line plots. The students will have explored how to read and make pictographs, bar graphs, and line graphs.
   Difficulties - It may be difficult for them to understand what type of graph to use for their data.
   Difficulties - It may be difficult for them to find central tendencies if they have difficulty with their basic math facts.
   Difficulties - They may have difficulty organizing their information.
Stage 2: Determine Acceptable Evidence

What evidence will show that students understand?

1. Pre-Assessment (pre-tests, concept maps, KWL, surveys, etc.):
   - pre-tests, KWL chart, "What do I need to know?"

2. Performance Tasks:
   1. Collecting data and creating each type of graph, finding the central tendencies for each set of data.
   2. Presenting their graphs with an interpretation of the data.
   3. Using a package of M&M's for their data and creating the various graphs and finding the central tendencies.

3. Summative Assessment (Quizzes, Tests, Prompts, Projects, etc.):
   - Chapter review
   - Chapter Test
   - Writing about it in their journals

4. Formative Assessment (Dialogues, Observations, Work Samples, etc.):
   - Daily assignments with the graphs
   - Observation on organizing data and graphing it
   - Self check lessons
   - Conversations with student explaining their data and graphs

Briefly explain HOW you will use formative assessment and feedback to redirect and focus your instruction for improving student achievement. Provide at least one example.

After each daily assignment has been completed, I will redirect the students who are having difficulty with that particular graph and data. This is where I will use tiered assignments and have them grouped. I will reteach that specific graph and data to specific students. I will change the difficulty level so that it fits their needs and they can be successful. I will also listen to their explanations and verbal responses and redirect when necessary.
5. **Student Self-Assessment:**

The students will have a self check for the central tendencies. They will have a checklist for each type of graph to make sure they have included all the necessary information.

6. **Attach or include specific rubrics being used for this lesson/unit:**

   I will use the Longfellow grading scale:
   
   90-100 = A  
   80-89 = B  
   70-79 = C  
   60-69 = D  
   59-0 = F

   Part of the points for the grade include the title of the graph, how they made the horizontal axis and labeled it, the vertical axis and labeled it, did they use the right type of graph, did they plot the information correctly, and their answers to the range, mode, mean, median of each set of data.
Stage 3 : Learning Experiences and Instruction

What sequence of teaching and learning experiences will equip students to develop and demonstrate the desired understandings?

1. Major Learning Activities:

   1. Introduction of Unit.
   2. Reading and discussing information from the text book, which would include vocabulary, sample graphs, and using models.
   3. Working through the practice and problem solving problems.
   4. Learn how to find range, mode, mean, and median. (Central tendencies)
   5. Project directions for making graphs.
   6. M&M project
   7. Creating the various graphs, posting them, or by presenting them.
   8. Finding the central tendencies for each set of data for the graphs.
   9. Chapter quizzes, test

2. Materials, Supplies, & Resources (technology & print):

   5th grade Math textbook
   notebook paper
   graph paper
   calculators
   M&M's
   colored pencils

3. Classroom Management:

   1. Collection of data, needs to be monitored by the teacher to run smoothly and time efficiently, and so as not to disturb the learning of the other classrooms. The expectations of each student will be explained ahead of time.
   2. Independent work - assignment of certain practice and problem solving problems listed on the board, making sure they are on the right types of graphs, checking for understanding as they are working.
   3. Making sure there are enough supplies for everyone.
4. Support Services and Special Teacher Notes:

1. Students who need help with reading and/or writing may need extra support services.
2. Students who are not fluent with their basic facts will need extra support.
What specific differentiated instruction strategies will be used in the lesson/unit? Fill in each section that applies.

1. **Differentiated Process:**

1. Gathering and recording data will be done in groups and individually, depending on the ability of the student.
2. The amount of time spent on gathering data will be adjusted.
3. There will be movement of going to different classrooms to gather data from other students, while others will use a variety of informational texts to gather data.
4. The amount required on each type of graphs and which graphs will depend on the ability of the student.
5. Journal writing

2. **Differentiated Content:**

1. Various materials for gathering data, ie newspapers, magazines, library books, almanacs, classrooms.
2. Assignments from the book at various levels, basic for those that need basic skills, on level for those who have the basic skills, challenge for those who excel in math.
3. Independent assignments for the graphs.
4. Group assignments for the graphs.
5. Various literature books on graphs.

3. **Differentiated Product:**

1. Various assignments and graphs
2. Various journal entries