NCEA Math Lesson Plan

Grade: 6 **Subject:** Mathematics

Domain:
Statistics and Probability

Standard Number(s) and Description:
6.SP.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.

Vocabulary to be Highlighted:

Mathematical Practices (#):
4. Model with mathematics.
5. Use appropriate tools strategically.
7. Look for and make use of structure.

Essential Questions:
How are measures of center used in the world to describe sets of data?
How can we use the mean, median, mode, and range to describe the shape of the data?
How can we compute and compare the mean, median, and mode?

Materials/Tools (include technology):
Measuring tapes
Large white paper
Computers
Markers
Calculators

Connections to Other Math Domains:

Connections to Other Subject Areas:

Catholic Identity Component:
Psalm 139:14 "I praise you, because I am wonderfully made; wonderful are your works! My very self you know."
Genesis 1:27 "God created mankind in his image; in the image of God he created them."

Resources (attachments):
Jeopardy game: available at http://www.superteachertools.us/jeopardyx/library.php (TYPE "mean, median, mode, range" (copy and paste the text without quotation marks) into the search bar and select the game with 25 questions)

Activities/Timeline:
1. Find Psalm 139:14 and Genesis 1:27.

2. Show students the Bible verses on the board and have a volunteer read them aloud. Have students tell their neighbor what the verses mean to them and share their neighbor's response. Tell students that we will be exploring how we are each unique, and "wonderfully made" (variance), yet we all are created "in the image of God" (represented by measures of center). To accomplish this, we will measure our wingspans. Since each student's wingspan will be unique, make the connection that each person is unique. Since we all have a wingspan, we are the same, as we all are made in God's image.

3. Students will use metric measuring tapes to determine the wingspan (fingertip to fingertip) of each other to the nearest tenth of a centimeter. Each student must measure at least one other person in the class.

4. Collect data for all students on the whiteboard so that all students have access to it. Input data into an Excel spreadsheet or similar technology, if available.

5. Now that we have a large set of data, we need to analyze it. First, review how to find the measures of center.

6. Gather students back into whole class mode. Students should have knowledge already about how to calculate measures of center. Use the topic "How Many Family Members Do You Have?" to collect whole class data, while having volunteer students

- Collect data (write down others' responses on board),
- Arrange data in order least to greatest,
- Show how to find the minimum and maximum (good for inclusion),
- Find the range (the number of steps between the maximum and minimum),
- Find the mode of the data (which item appears most),
- Find the median (the middle value).
- Then have students find the mean in pairs, by having them add all the values and divide by the number of items in the data set.
- Now that we have reviewed how to calculate measures of center, we return to our wingspan data.

7. In pairs/small groups, students will calculate mean, median, mode, and range and identify outliers, if any, of the wingspan data they measured and recorded of their classmates. Round answers to the nearest tenth, if necessary.

8. To verify accuracy, demonstrate how to perform calculations using AutoSum, Sort, etc. on Excel, to make it easier to analyze the data. Have students compare their original work with their Excel documents, if used.

9. Students will decide in which form to present this data to the whole class (chart, PowerPoint, etc.) and collaborate to create their presentation. Students should be sure to address both general tendencies shown in the data set and range of variance. Students should also discuss how the outliers affect the measures of center of the data set. How would the group relate these tendencies to the Bible verses we discussed at the beginning of class? Include the answer to this question in your presentation.

10. Students will share their work with the whole class and teacher should assess students' accuracy on the work they present.

Formative Assessment (what to look for, how/when to look):

For homework, the students should play the jeopardy game (listed in the resources section). If

computer access is unavailable, it is possible to print out the questions (and answers) in the game. Another option is for the class to use the game as review during some point in the unit. Observe student work and results of jeopardy game.
Summative Assessment: