

Box and Whisker Plots

1) Goal/Objective:

- a. The goal of this staff development is to demonstrate for teacher's hands on activity to introduce and teach box and whisker plot.

2) Math Concept:

- a. Constructing graphs and interpreting data.
- b. Determining the median of a set of data.

3) Materials:

- a. Index cards
- b. Construction paper
- c. 2 rolls of adding machine paper
- d. Strip of bulletin board paper about one foot wide and 20 feet long
- e. Flags (2 red, 2 blue and 1 green)
- f. Large open area
- g. Height of students in centimeters

4) Management:

- a. Things to prepare ahead of time.

Make large centimeter ruler to tape on the wall.

Gather construction paper, index cards, bulletin board paper, flags and adding machine paper.

- b. Participant groupings:

I will have one table of 16 teachers.

- c. Time Frame:

The approximate time for the entire activity is 30 minutes – 45 minutes.

5) Procedure:

- a. Introduction:

Drawing on teachers knowledge, ask questions about box and whisker plots.

1. "What is a box and Whisker Plot?"
2. "How many main values are located on a Box and Whisker Plot? Name them."

Tell teachers that today they will construct a box and whisker plot using their height.

b. Content Activities:

1. Give each of the teachers an index card and have them to go to the centimeter ruler on the wall and measure their height and record it on the card. Return to their seat.
2. Instruct the teachers to stand in a line in the front of the room in order from the smallest/shortest to the largest/tallest.
3. Then have the teachers place pieces of construction paper on the floor where there is a missing number. (Example if one teacher's height is 140 cm and the next height is 143 cm, we need to place a piece of construction paper on the floor for 141 cm and 142 cm.)
4. Instruct the teachers to find the median of the whole group of data. Give that teacher the green flag.
5. Next have the teachers find the extremes. Remind the teachers how to find the extremes. (The lowest and highest numbers) Give each of those teachers a red flag.
6. Tell the teachers that we need to locate two more numbers, the quartiles. (The median of the lower half of data (Lower) and the median of the upper half of data (upper) upon locating those numbers give each of these teachers a blue flag.
7. Tell the teachers that we are now going to use the bulletin board paper to construct our box part of our box and whisker plot. Start at the Lower Quartile and unroll the bulletin board paper out until you get to the Upper quartile. Inform teachers that they have just made the box part.
8. Have the teachers located the median of the set of data. Tell them that the median should be somewhere in the box but not necessarily in the middle. Tape the median on the appropriate place in the box.
9. Inform the teachers that they will now attach the whiskers to the box. Tell the teachers that the whiskers run from the quartiles to the extremes on both ends of the box.
10. Allow a teacher to start rolling the adding machine paper from the lower quartile to the lower extreme attach it with tape. Then do the same for the upper quartile and upper extreme. Make sure that the teachers attach their height card on the appropriate place on the box or whisker.
11. Let all teachers, except for the 5 (median, extremes, and quartiles) return to their seat, in order to view the box and whisker plot.

12. Have the remaining teacher tape the box and whisker plot to the wall for display and return to their seat.

13. Ask teachers to see if they can now go back and answer the questions from before.

c. Closure:

- a. Ask the teachers if they enjoyed the activity.
- b. Ask the teachers to share ways they can use the activity to teach box and whisker plots in their classrooms.
- c. Ask the teachers if they can find ways to make the activity suitable for all learners (advanced learners and resource students).
- d. Ask teachers if they can use this activity in their classrooms.