MTI Follow-Up Webinar

Statistics 6-9: Distributions

Gwyneth Hughes

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Suggestions for usage
This webinar is designed to assist teachers, administrators, and instructional coaches in understanding how foundational ideas about statistics might help in the instruction of the Common Core State Standards around data at the middle (and high school) level.

Materials Needed
A recording of the 6-9 Statistics: Distributions webinar as available to project or share with Participants in Google Drive. [https://drive.google.com/folderview?id=OB_4LR-7_IQNgcVkwducEazBiTVE&usp=sharing](https://drive.google.com/folderview?id=OB_4LR-7_IQNgcVkwducEazBiTVE&usp=sharing)

We recommend using the Voicethread version which will run off the web: [http://voicethread.com/share/5904122/](http://voicethread.com/share/5904122/) If you won’t have internet access during the webinar, you can download a quicktime movie of the webinar ahead of time from the above Google Drive folder. Right click on the movie and select “Download.”

Before beginning the webinar, teachers should complete the introductory activities that are located in the above Google Drive. They can/should work together to create and discuss their conclusions and representations.

Teachers should also have paper and pencil/pen and a copy of their grade level Common Core State Standards.

Facilitation Ideas
This webinar might be viewed in one workshop, or it could be broken up over multiple meetings to go more in depth into specific topics. To make this easier, the table below lays out the major topics and the associated slides.

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<th>Topic</th>
<th>Slides</th>
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<td>Introduction to statistics and the framework for statistical thinking</td>
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<td>What is a statistical question?</td>
<td>13-19</td>
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<td>Types of data and data collection</td>
<td>20-29</td>
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<td>Representing data: data displays (line plot, box plot, frequency table)</td>
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<td>Representing data: summary statistics (mean, median, MAD, SD)</td>
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<td>Comparing populations</td>
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<td>Summary and conclusion</td>
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Full webinar Facilitation
1. Begin the Webinar.
2. On slide 9, you may want to pause to allow participants to discuss their experience with data analysis. Most teachers, unless they are very young, will have had little experience with data analysis in their own education unless they specifically sought it out.

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3. On slide 14, pause and allow participants to discuss how the questions are similar and different.
4. After slide 16, pause to clarify the difference between statistical and non-statistical questions. The bottom line is that statistical questions force one to grapple with the variability of data. For example, what will we think of as typical? How do we define “favorite” for 60 people? Is it the one with the most votes are the one that the fewest people hate?
5. After slide 22, pause to make sure participants understand the difference between quantitative and categorical. After slide 23, pause to make sure that participants understand the difference between continuous and discrete.
6. On slide 34, pause to clarify what each representation indicates and ask participants to compare them to their own representations from the introductory activities.
7. Slide 35 asks participants to pause and reflect on the value of these tasks and student-generated representations.
8. Slide 39, make sure teachers can articulate where each of these are visually and, if possible, how that visual relates to the formulas used to calculate those measures.
9. Slides 41-42, talk about box plots which are one of the more abstract ways to represent data. We find that box plots sometimes take some time to understand and interpret. It may be worth it to have teachers go through the process of creating their own box plots at this point to get a little practice with these ideas.
10. Slides 49-50 are about standard deviation. Depending on the grade level and interest of the teachers attending these slides might be skipped.
11. On slide 55, pause and ask teachers how sure they are that there are more blue candies than green candies in the hopper. Generate some ideas about how to test this hypothesis.
12. Slides 58-59 examine the ratio of the difference between population means to their shared MAD. This concept is not easy and might take some additional discussion.
13. Slides 62-67 connect the concepts from the webinar to the Common Core State Standards. Before watching these slides, teachers might go through their own standards to see where they see connections to the webinar.

**Extensions**

1. Ask teachers to create their own statistical questions that would be appropriate for their students to investigate. Brainstorm ways in which that question could be addressed with data and think about how students might collect and analyze it.
2. Find or collect data and think about what statistical questions could be answered by that data set, and what representations would be appropriate given the type of data.