Online Learning Experiences and Impact on Statistics Education Perspectives
Taylor Harrison, Christina Azmy, Dr. Hollylynne Lee

Research Problem and Significance

• Increasing importance of data analysis and statistical thinking in today’s society
• Standards for mathematics have added sections on statistics and probability at middle and high school levels (National Governors Association Center for Best Practice & Council of Chief State School Officers, 2010)
• Emphasis placed on conceptual understanding of statistics topics → more of a need for teacher preparation in statistics education
• Despite this need, evidence is that teachers are underprepared to teach statistics topics (Lovett & Lee, 2017)

Theoretical Framework

Teacher Perspectives on Teaching Statistics

• 4 categories of factors that affect PSTs self-efficacy (Lovett & Lee, 2017)
• Online experience impacted perspectives of participants - practicing teachers (Lee, Lovett, & Mojica, 2017)

Using Technology to Teach Statistics

• is effective (e.g. Hammerman & Rubin, 2004; Lee et al., 2014; Meletiou-Mavrotheris, 2003)

Online Learning

• is effective. Relevant factors are supportive learning environment, learners’ motivation, interaction, and opportunities for practice. (Noesgaard & Ørngreen, 2015)

Research Question

How did participants’ experiences in online modules impact their perspectives on what good statistics teaching and learning is?

Results and Conclusions

Five Salient Areas of Participants’ Perspectives

<table>
<thead>
<tr>
<th>The Nature of Statistics</th>
<th>Features of a Good Statistical Task</th>
<th>Learning Statistics</th>
<th>The Practice of Teaching Statistics</th>
<th>The Role of Technology in Statistics Education</th>
</tr>
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<tr>
<td>Statistics is different from mathematics</td>
<td>Interactive or “hands-on”</td>
<td>Students need to get to know data</td>
<td>Need for teachers to ask good questions</td>
<td>Allows performing of statistical tasks quickly</td>
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<tr>
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<td>Usefulness of multiple linked representations</td>
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Note: Bolded perspectives were mentioned by over half of teachers or were observed in over half of lesson plans.

• Perspectives seen here also seen in previous online contexts – ideas about:
  • Statistics more than computations and procedures, using dynamic technology, using real, messy data, and increasing levels of statistical understanding (Lee, Lovett, & Mojica, 2017)
  • Additional perspectives we observed – ideas about:
    • Curricular considerations, the engaging nature of statistics, as well as broader perspectives such as pedagogical strategies and the features of a good statistical task
    • Lack of evidence in lesson plans of expressed perspectives in discussion forums
    • Eight participants stated students should collect their own data, yet only two lesson plans had students do so
    • Six participants specifically said teachers need to provide their students with guidance on how to use technology, and yet, only two lesson plans included the teacher doing so

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