THE STORIES THEY TELL: EXPLORING STUDENTS' UNDERSTANDINGS OF DATA VISUALIZATIONS

Lynn Liao Hodge[1], Joy Bertling[1], Rita Swartzentruber[1], Amanda Galbraith[1], and Shande King[2]

[1]The University of Tennessee, [2]Trevecca Nazarene University

Data science is often described as thinking through and with data. Big datasets are becoming more accessible, and data-based arguments are increasingly used to understand phenomena and to persuade in the context of public policy debates. However, mathematics, and statistics in particular, is often taught as a set of definitions without a deep understanding of the application of the concepts (Bajak, 2014. Lee et al. (2021) describe a framework for data science education that argues for consideration of the personal, cultural, and socio-political layers of individuals' experiences.

Through the Data Visualization Project (DVP), we design and provide professional learning for teachers to support students' learning of data visualizations in order to analyze and summarize data addressing topics of personal/community interest. In this presentation, we focus on interviews conducted with students in the pilot phase of the project which investigated their understandings of data visualizations through a focus on storytelling. We draw attention to two research questions: 1) What are students' understanding of data visualizations? 2) What are students' relationships with data?

The project began in Fall of 2021, builds on a previous project conducted in the elementary grades, and will continue through 2024. In the pilot phase, the project team engaged 12-14-year-old students in activities that involved analyzing data and creating data visualizations. Project sessions included a subset of the authors and the 20 student participants. The sessions took place in the STEM (Science Technology, Engineering, and Mathematics) classroom of a school located in the Southeast United States. A future iteration of the project sessions will take place in an art class with student participants of a similar age. Preliminary findings from student post-interviews show that focusing on the stories that the data visualizations tell, both those created by the students themselves and those created by others, is an effective way to draw attention to the contextual nature of the data and to assess students' understanding of data analysis and visualization. Further, it is anticipated that the stories create opportunities to position students as authors of the data. Current findings will be shared.

References

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