ASSESSING GRAPH SENSE IN AUTHENTIC SETTINGS: PRE-SERVICE ELEMENTARY TEACHERS' ABILITY TO CHOOSE APPROPRIATE GRAPHS TO REPRESENT DATA

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Our purpose was to assess pre-service elementary teachers' conceptual knowledge of graphing in authentic settings, and to develop and test an instrument to assess their ability to choose appropriate graphs to represent data.

The *Principles and Standards* document of NCTM identified "to compare the effectiveness of various types of displays in organizing and presenting data to an audience" an important curricular goal under the statistics standard for grades 3-5. Assessment of pre-service elementary teachers' ability to choose appropriate graphs has not received much research attention (Friel, Curcio & Bright, 2001).

In an integrated course on mathematics and science methods, pre-service elementary teachers were involved in authentic science inquiries and produced presentations of their projects. Twenty-three such projects were analyzed for the graphs that students created. Types of graphs and match with their purpose in the projects were evaluated. It was found that line graphs, scatter plots, and map graphs were under-utilized than their optimum level, and bar graphs were over-utilized. There was incompatibility between the declared purpose of graphs and the types of graphs in about 40 % of the cases. Findings show the need for more explicit attention for teaching conceptual knowledge of graphing in the mathematical preparation of pre-service teachers. Visual examples of students' work highlighting mismatch with declared purposes of graphs are shown in this poster presentation. Insights for developing an instrument and initial findings of a pilot study testing the instrument to assess pre-service elementary teachers' ability to choose graphs was also shared in the presentation.

Reference

Friel, S.N., Curcio, S.R., Bright, G.W. (2001). Making sense of graphs: Critical factors influencing comprehension and instructional implications. *Journal For Research In Mathematics Education*. *32*(2), 124-58.