

**DEVELOPING PICTORIAL SPACE:  
INSTRUCTIONAL STRATEGIES FOR EFFECTIVE STATISTICAL GRAPHICS**

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**PURPOSE**

The overwhelming premise of visual imagery is that of communication. Images can be visual renditions or representations of ideas, dimensions, and events (Dickinson, 2001). Representing statistical ideas and information is a complex task-as Tufte relates, "all communication between the readers of an image must take place on a two-dimensional surface" (1990, p.12).

Our purpose for this presentation is to share the instructional techniques developed within an undergraduate mathematics course designed to teach statistical graphics skills; and describe the development of authentic assessments to measure student learning and assessment tools (rubrics) for multivariate statistical graphics.

**METHOD**

This presentation documents and displays the curricular development, implementation, and authentic assessment of an innovative undergraduate student project utilizing 'visual displays of quantitative information' (Tufte, 2001) and descriptive statistics. Students were enrolled in an undergraduate mathematics course, and for many students in the class, this was their first exposure to both statistics and graphical display.

**RESULTS**

The students engaged in data collection and statistical calculations; and thus constructed 2-dimensional graphical images to effectively display and communicate quantitative information. By collecting their own data, (Wainer, 2005), students felt the project was more "real" than using a dataset from a textbook or similar source. Components of visual expression (Pumphrey, 1996) are evidenced throughout the student projects. Examples of student projects are displayed, and corresponding instructional techniques shared.

**REFERENCES**

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