

*The Interplay of
Prospective Secondary Mathematics Teachers'
Mathematical Thinking and Use of Dynamic Geometry Software*

by

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I will report on the pilot study for my dissertation. In this study, the interplay of mathematical thinking processes used/developed by prospective secondary mathematics teachers taking a college geometry course and their use of dynamic geometry environment (DGE) software was examined. What factors influence DGE use when working on open-ended geometry problems? How does the thinking of pre-service teachers begin, shift and grow when working with DGE and what factors are involved? How is this revealed by their DGE use?

The main study included non-participant observation of the class and (three individual, two small-group) semi-structured task-based interviews with a sample ($n = 6$). Data came from classroom observation fieldnotes and audio-taping, video-taping, saving of DGE files, collection of anything written on paper and fieldnotes during interviews. Audio/video data was transcribed. The method of analysis was grounded theory building. Pirie and Kieren's (1989, 1994) Recursive Theory of Mathematical Understanding was used to trace growth of thinking. The dragging modalities framework of Arzarello et al. (1998) and Olivero (1999, 2002) was used to complement this with a theory relating cognition and DGE use. Harel and Sowder's (1998) proof schemes model was used to analyze the reasoning used to justify a conjecture.

I will also report on possible implications for classroom teaching and how the pilot study informed my current dissertation study.

**Monday
January 29, 2007
4:00 p.m.
NSF 1209**