An Analysis of Math Teachers’ Use of Interactive Graphing Software as an Instructional Tool.

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Introduction

Dynamic interactive graphing software, such as The Geometer’s Sketchpad and GeoGebra, has been available for teacher and student use in the math classroom for some time. However, it is not certain to what extent math teachers are using these technologies in their instruction. This qualitative study proposes to analyze the abilities and opinions of secondary math teachers concerning the use of interactive graphing software as an instructional tool through a series of interviews and classroom observations.

Categories of Observations

- Technical Ability of Teachers
  - Do they understand how to operate the software?
  - Do they desire training?
  - Do they know how to combine the technology with other technologies? (e.g. projectors, interactive whiteboards, etc.)

- Current Implementation Practices of Teachers
  - Do they use the technology often?
  - Which technology do they use? (e.g. GeoGebra? Sketchpad?)
  - Use technology as only a visual aid or incorporate active use by their students, as well?
  - Use technology as only a reinforcing tool or as a main form of instruction through discovery and investigation, as well?
  - Is technology readily accessible to the teacher? Students?
  - Use technology in favor of traditional chalkboard/whiteboard?

- Attitudes & Opinions of Teachers
  - Does the technology help students learn?
  - Does the technology make instruction easier? More efficient?
  - Do teachers want to learn more about implementing the technology?

Emergent Themes

- Teachers are not proficient in the technical use of the software, nor are they proficient in combining its use with other technologies.
- Implementation of the software is done on only a basic level.
  - Using the technology for the sake of using technology.
  - Using the software as a supplement to presentations, but not providing opportunities for student use.
- Teachers do not use the software to drive student exploration or promote discovery learning.
- Teachers are interested in professional development training in the software, including both the technical aspects of its use and implementation strategies for their instruction.

Discussion

Based on the small sample of interviews and observations to this point, it is determined that teachers are making efforts to implement these technologies into classroom instruction, yet they are not maximizing the potential benefits the software can provide for students. Previous research supports the findings of this project concerning the perceived value that teachers see in professional development training in the use and implementation of the software (Nordin et al., 2010). Furthermore, research has found that implementation practices that focus on direct student use of the software lead to students exhibiting higher order thinking skills (Nordin et al., 2010), increased confidence (MacGregor & Thomas, 2002), and the opportunity to learning through discovery (Toumasis, 2006). It is the belief of this researcher that these are some of the areas teachers need to focus on when designing lessons that involve the technology.

Limitations of this study’s findings include a very small sample size to this point. Furthermore, only teachers who have knowledge of the technology’s existence and some experience in its use were considered as potential participants. Therefore, it is reasonable to assume that there are many teachers who have not even considered implementing the technology into their instruction. Certainly, this proposed study needs to be further developed and further studies concerning this topic need to be conducted.

References

