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The Incorporation and Effects of Dynamic Geometry Software on Students in a Geometry Classroom

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The Incorporation and Effects of Dynamic Geometry Software on Students in a Geometry Classroom

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Research Question

How are different technological tools incorporated in teaching geometry?

Literature Review

- According to Hahkioniemi and Leppaaho (2012), the most effective way for students to learn mathematics is through teacher-guided engagement and practice.
- Wares (2007) stressed that dynamic geometry constructions allowed the students to explore geometric relationships and properties and gain a deeper understanding of the conjectures.
- Funkhouser (2002) examined incorporating constructions in the classroom to provide students opportunity to learn through their own explorations.
- Using dynamic geometry software, like GeoGebra, allows for a combination of theory and practice and it provides a development of language, according to Andresen and Misfeldt (2010).

Methodology

- I content-analyzed a high school geometry textbook by examining strategies of incorporating technology.
- I analyzed the video tutorials, graphing calculators, and Active Math activities, looking at how and when they were incorporated into the book.
- Common themes were found between and within the technologies, based on similarities and differences, missing data, and repetition.

Results and Data Analysis

- **Video Tutorials:** There were two kinds of video tutorials, [homework](#) and [lesson](#). The tutorials provided multiple representations of concepts, additional examples, and are somewhat interactive. These were necessary components to effectively incorporating DGS, based on the literature review.
- **Graphing Calculators:** There were few instances in which a graphing calculator activity was incorporated into the lesson. The calculator was used for exploration as well as multiple representations.

Results and Data Analysis Continued

- **Active Math Activities:** The Active Math activities were frequently incorporated throughout the book. The Active Math is comparable to various types of DGS, such as GeoGebra. These activities provided exploration, multiple representation, and construction. According to the literature, students who explore and construct concepts gain a deeper understanding of the material.

Conclusion

- Incorporating technology, specifically DGS in the classroom, benefits students understanding of geometric concepts.
- The best ways to incorporate technology in the classroom are to use it as an additional form of representation and as a way for students to explore.
- Future research could focus more in depth on the ways to implement DGS.