



Abstract

Many schools are overlooking the importance of mathematics. For many years, language arts curriculum and instruction has been the target area to improve. Recently, multiple educators conducted research on effective teaching strategies for numeracy. Guided Math, also known as small group instruction, for mathematics was one of the top strategies experimented on. Benders and Craft (2016) found positive results in their study using flexible small groups for math achievement in first grade. John, Joseph, and Sampson (2014) conducted a study to determine if guided math training would adequately prepare prospective teachers to effectively deliver math concepts. They found positive results using the guided math strategy to meet students' needs. This presentation will elaborate on the effectiveness of guided math.

Introduction

Introduction: Education is constantly changing with the demands of national and state expectations. As educators, teachers must find effective strategies to satisfy these requirements and to meet the needs of all students. There are a vast amount of methods teachers use to educate the young about language arts content. On the other hand, whole-group instruction is still the primary and most common strategy that teachers use to teach mathematics. Little focus is placed upon mathematics, which is why it is important that teachers are flexible and experiment to find efficient teaching practices for math education.

Guided reading, also known as small group instruction for language arts, has shown positive results in teaching reading, writing, and grammar skills and content. However, not many educators use this strategy for teaching numeracy. Research shows that Guided Math (small group instruction for mathematics) could be effective for math instruction just as it is for reading. The purpose of this presentation is to support the idea that Guided Math is an effective strategy to teach mathematical concepts.



Contact

Megan Fabro-Mariano
Elementary Education
megan808@hawaii.edu

Research Question & Hypothesis

Research Question: Is guided math an effective teaching strategy?
Hypothesis: Using guided math or small group instruction in mathematics will benefit students by creating a proactive environment that will result in improved retention to the curriculum.

Methods

To determine whether the stated hypothesis was viable or not, information was gathered through journal articles from multiple, reliable, and educational databases. These articles support the hypothesis by stating the benefits of small group instruction as well as providing evidence through different studies. One study focused on using small group instruction in a first grade class to see if it would raise student scores. Another study focused on educating prospective teachers about the use of guided math in their teaching.

Results

Benefits: Differentiation, Time Management, Independent Learning, Cooperative Learning, Personal Interaction, Ongoing Assessment
Study 1: A pre- and post-test were handed out to a group of first graders to measure knowledge growth regarding how to tell time. The results showed tremendous growth in student achievement using the guided math strategy. Small group instruction helped the teacher differentiate math content to meet her students' needs.
Study 2: 31 prospective teachers were observed from the beginning of semester I (before guided math training) to the end of semester II (after training) and were rated on their ability to present, prepare, and execute their lessons for both semesters. Results from Study 2 is indicated in Table 9. The results show significant differences between the scores of semester I and semester II. This study's findings found guided math to be a successful teaching strategy after the prospective teachers were provided adequate training.

Table 9: Paired t-test for prospective teachers scores before - Semester I, after - Semester II

Variables	T	P Value	Mean of Difference
presentations / demonstrations	-7.48	p = 0.00000004	-2.14
on-going preparation	-2.86	p = 0.007964	-1.73
fld_teach_guided_math	7.8	p < 0.00001	-9.87

Table adapted from John, Y. J., Joseph, S., & Sampson, A. (2014)

Table 11: Reflections on guided math (Excerpts)

Reflections from guided math

"I particularly liked guided math because I had the opportunity to meet students needs - by targeting what they needed. Many of my shy students participated in their small groups and one could see the sense of pride as they answered questions accurately."

"During my guided math groups, students were given the opportunity to develop and use math strategies. My students became contented with different types of problems, and some of them were able to discuss measurement of the items that were assigned."

"After conducting a mini-lesson in class, I took my students (physically handicap) on a tour of the school to find cylindrical shapes. The class was divided into small groups, with four adults controlling a group each. My students were able to discuss and talk about the various items around the school that were cylindrical in shape". My guided and shared math session was a wonderful experience for all."

Table adapted from John, Y. J., Joseph, S., & Sampson, A. (2014)

Conclusions

The hypothesis, using guided math or small group instruction in mathematics will benefit students by creating a proactive environment that will result in improved retention to the curriculum, was supported by the results found through the different studies. Guided math seems to greatly benefit individual student achievement. Students learn to be responsible for their learning, interact with one another, and are able to learn according to their own levels. Teachers also found guided math training to be 100% beneficial because they were able to differentiate instruction according to their students' levels. There are only a few literature articles focusing on guided math instruction. Therefore, there is a great need for more evidence to support small group instruction.

References

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