



Conceptual Teaching in Mathematics

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Abstract

In two math classrooms, teachers decided to change up their way of teaching because the "traditional" way of teaching was not sticking well with their students. Both teachers used conceptual teaching techniques and were presented with promising results based on the way their students performed after a shift in their teaching approach was done. Conceptual teaching not only gives students a better understanding of various concepts, but it also allows the students to create their own meaning of what they are learning in math class.

Introduction & Research Ques.

Many say that teachers teach the way they were taught and this is true because up until now there are teachers who run their class with the same procedures that were used ten years ago when these educators were in school in the same seats as their students. For many years, procedural teaching has been utilized throughout many classrooms, and leads to very similar results in students' learning. Conceptual learning is when students are taught to understand the procedures and why these procedures are used, according to research, the students that were taught through conceptual teaching presented better results in comparison to the students that were taught using a procedural approach.

How does conceptual teaching benefit the learning process of students?

Methods

To find information to answer the research question and support the hypothesis, research was conducted through the *National Council of Teachers of Mathematics*. Articles and journals found through NCTM provided key points and details that supported the hypothesis and answered the research question, "How does conceptual teaching benefit the learning process of students?"

Results

Below is a chart of student responses regarding conceptually taught lessons in journal article, "Conceptual Understanding, Problem Solving, Communication, and Assessment Meet at the Board." This study focused around students working in pairs to solve a problem and diverting from explanations that revolve around explaining steps taken because of formulas and/or procedures. The student responses exhibit positive outcomes that provide support to this research. More student responses can be found on page 423 of this article.

Student Feedback

Response Categories	Students' Perception
Resource Knowledge	<i>I was able to better understand concepts by seeing others point to my mistakes.</i>
Strategies	<i>I have learned to work through the problems more thoroughly and to understand each step instead of just applying whatever formula looked right.</i>
Beliefs (Affect)	<i>My confidence and speed in problem solving has improved.</i>



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Discussion

Based on the research that was done, majority of the resources agreed that conceptual learning allows students to grasp a deeper understanding of mathematics through instruction that allow students to collaborate and manipulate with numbers and operations that moves forward from procedural explanations and onto explanations that really go into depth as to why a formula and/or rule is used.

Conclusions

If conceptual teaching is used in math courses, students will have more opportunities explore math concepts and will develop a stronger understand of said concepts, this is because conceptual understanding moves away from the traditional way of procedural teaching where students are only taught about surface level ideas, wherein conceptual teaching allows the teacher and students to delve into math concepts into more detail.

References

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