

Mathematics

Why teach mathematics to students with significant cognitive disabilities? Mathematics provides a model for problem solving by applying mathematical symbols and other abstractions. Mathematics can be given meaning by beginning with a problem that has importance to the student's life and preferences. For example, the student may want to attend a sports event with a friend or plan for a class party. During the sports event, the student may encounter problems like determining how many friends can fit in the van, what time to leave, the best section of the stadium to find a seat, how much to spend on snack, who is winning, or the statistics of a specific player. Planning a party may require understanding how many beverages are needed, how much seating to procure and how to arrange it, or which store offers the best deal on cakes. To approach these real life activities from a mathematical perspective, the student begins by identifying the problem. One way to do this is to summarize the problem as a brief story to be read aloud. This problem is then translated into mathematical representation for ease of developing and communicating the solution. This requires using some type of mathematical representations such as numerals or sets to represent numbers or graphic organizers to assist with creating the solution. Next the student solves the problem. During the school year the student uses knowledge, reasoning, and skills mastered through the study of geometry, algebra, measurement, numbers and operations, and data analysis to develop and identify strategies. Many of these skills can be taught with systematic instruction of a task analysis of the problem solving strategy. Once a solution is achieved, the student applies this back to the real life context. For efficiency, the student will practice many scenarios using stories to solve problems in classroom settings (e.g., hypothetical sports event). Students also need opportunities to apply emerging skills in real life activities. With new problem solving skills, even at the most basic level such as finding one chair for each party participant, the student gains increased autonomy in managing everyday situations. It is this increased autonomy that is the ultimate goal of all mathematical learning for students with significant cognitive disabilities.

Conceptual Model of Mathematics for Students with Significant Disabilities



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Conceptual Model of Mathematics

Q. What is the goal for learning in mathematics?

A. **Increased autonomy** in managing everyday situations.

Q. Why teach mathematics to students with significant cognitive disabilities?

A. Mathematics provides a model for problem solving by applying mathematical symbols and other abstractions.

Q. How is mathematic meaningful to students with significant cognitive disabilities?

A. Mathematics can be given meaning by beginning with a problem that has importance to the **student's life and preferences**.

Q. How can instruction in mathematics accomplish this?

A. To approach real life activities from a mathematical perspective, students need to identify the problem, translate the problem into a mathematic representation, solve the problem, and then apply the problem.

Q. Will all students learn to math?

A. Students need opportunities to apply emerging skills in real life activities. With new problem solving skills, the student gains increased autonomy.

Step 1: Identify the problem

One way to do this is to summarize the problem as a brief story to be read aloud.

Step 2: Translate the problem into a math problem

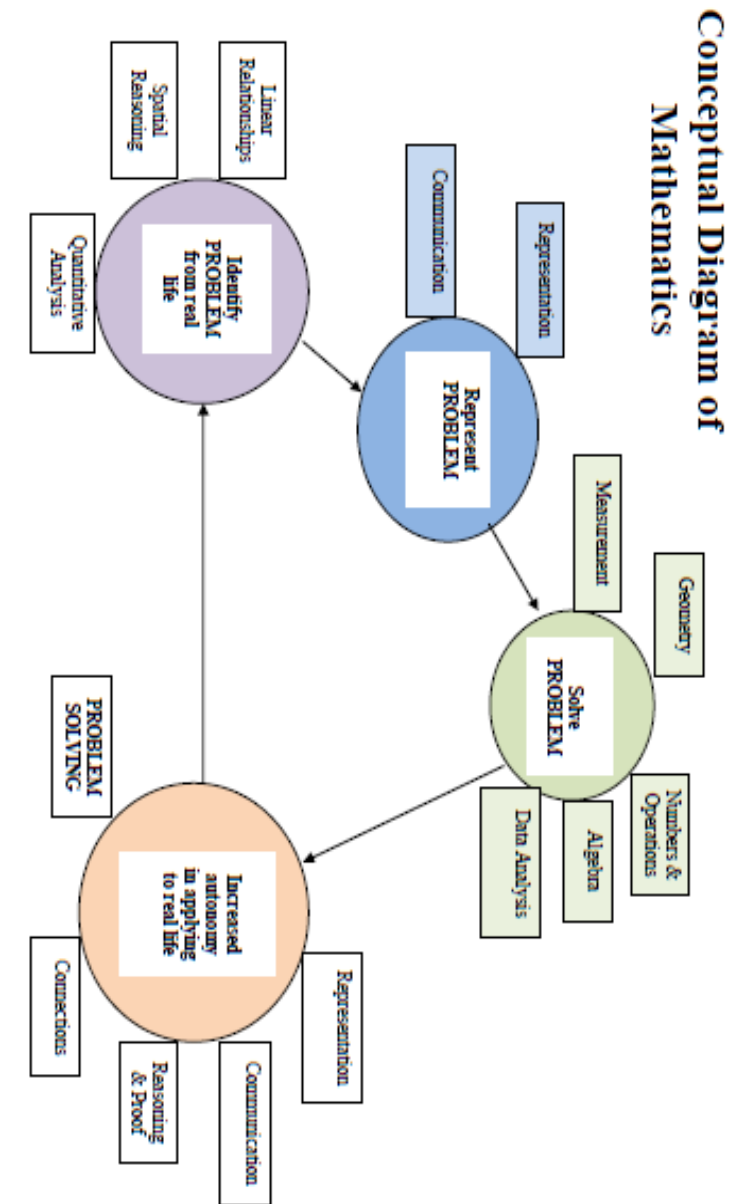
This problem is then translated into mathematical representation for ease of developing and communicating the solution. This requires using some type of mathematical representations such as numerals or sets to represent numbers or graphic organizers to assist with creating the solution.

Step 3: Solve the problem

During the school year the student uses knowledge, reasoning, and skills mastered through the study of geometry, algebra, measurement, numbers and operations, and data analysis to develop and identify strategies. Many of these skills can be taught with systematic instruction of a task analysis of the problem solving strategy.

Step 4: Apply to real life

Once a solution is achieved, the student applies this back to the real life context. For efficiency, the student will practice many scenarios using stories to solve problems in classroom



*For Mathematics,
"It's about solving the problem"*