



TouchMath Program: Effectiveness for Individuals with Physical and Developmental Disabilities

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B

Background...

- TouchMath is a multisensory program that uses manipulatives to help students learn basic numeracy and mathematical skills.
- TouchMath has been shown to be an effective tool in helping students with physical and developmental disabilities learn mathematics by using three sensory modalities: hearing, touching and seeing (Wisniewski and Smith, 2002).
- The goal of this program is to allow students to develop basic mathematical skills by allowing them to use their strongest modality while building up their skills on the other weaker modalities (Wisniewski and Smith, 2002).

Key Findings....

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Summary of what works:

- In the two studies found for this literature review, the TouchMath program was shown to be particularly effective in developing basic mathematical skills for students with physical and/or developmental disabilities in which a multisensory modality is preferred (Avant and Heller, 2011; Wisniewski and Smith, 2002).

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- The TouchMath program is recommended for students with physical disabilities such as Spina Bifida, Cerebral Palsy, and Stroke; as well as any form of a developmental disability that impacts the student's ability to acquire basic mathematical skills through traditional methods (Avant and Heller, 2011; Wisniewski and Smith, 2002).
- Since the TouchMath program uses a multimodality approach, educators can use the student's preferred sensory modality, such as vision, audition, or touch, to teach basic mathematical and numeracy skills.
- Findings indicate that students who learn TouchMath are able to generalize what they have learned and apply it in regular mathematical instruction and evaluations (Avant and Heller, 2011).
- Findings also indicate that students who learn TouchMath early in the year continue to apply their skills months after the instruction has ended (Avant and Heller, 2011).
- It is also recommended that educators be aware of his or her attitude towards the program. It has been found that teachers' attitudes toward a new strategy heavily influence the students' attitude to learn and use this new skill in their regular math class (Avant and Heller, 2011).
- It is recommended that educators monitor student progress as they use TouchMath because program adaptations might be needed in order to best meet students' individual needs. Adaptations have been shown to promote learning and simplify the program for students who struggled with the TouchMath strategies initially. Such adaptations include adding colour blocks or drawing arrows, which can promote learning and help with generalizing this skill to everyday math classes (Avant and Heller, 2011).

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The body of literature on the TouchMath program is quite limited and evidence of its effectiveness with special education students is even more limited. However, the two articles found for this review report that TouchMath is a simple strategy which can be implemented along with the regular math curriculum. It is recommended that the program be taught intensively, in a series of classes, followed by various practice sessions to reinforce and build upon the newly learned skills. Also, teacher evaluations and observations of student success should be conducted to assess the effectiveness of this strategy and to determine if any program adaptations are needed.

BOTTOM LINE ACTIONABLE MESSAGE

The following search terms were used to retrieve articles:

- Tactile Math
- TouchMath
- TouchMath Program
- Multisensory Math

of articles found: 2

The following selection criteria were used to select pertinent articles:

- Selection was based on studies that examined the effectiveness, reliability, and generalizability of the TouchMath program.
- Selection was also based on studies that looked at the usefulness of TouchMath on individuals with physical and psychological disabilities.

References:

The articles summarized below were reviewed in preparation of this BLAM.

- Avant M.J.T., & Heller K.W. (2011). Examining the effectiveness of TouchMath with students with physical disabilities. *Remedial and Special Education*, 32(4), 309-321.

Avant and Heller (2011) examined the effectiveness of Touch Math on individuals with a physical disability. They conducted a multiple baseline design using three subjects. Their independent variable was the Touch Math program and their dependent variable was the students' accuracy in adding simple mathematical problems to sums of 20 (Avant and Heller, 2011). To begin with, they obtained a baseline score based on three separate tests they administered on separate days. This baseline was obtained based on the percentage of correct answers prior to the introduction of the Touch Math program. Once the phase was complete, the intervention phase commenced which involved instructing the first student in Touch Math. The student must have reached the criterion level of 85% correct on at least two out of three addition tests in order for the second or third student to commence training. Once all three have reached the criterion level than the generalizability phase began. In this phase a probe of data was taken spanning two sessions on the students' use of Touch Math during daily math lessons. From this comprehensive design, they found that there was 100% agreement of generalizability of Touch Math across the population. Furthermore, all three students showed an increase in "percentage of correct answers" as the intervention phase went by (Avant and Heller, 2011)

- Wisniewski Z.G., & Smith D. (2002). How effective is touch math for improving students with special needs academic achievement on math addition mad minute timed tests? Retrieved on September 29, 2011 from:
http://www.eric.ed.gov/ERICWebPortal/search/detailmini.jsp?_nfpb=true&_ERICExtSearch_SearchValue_0=ED469445&ERICExtSearch_SearchType_0=no&accno=ED469445

Wisniewski and Smith (2002) attempted to replicate previous studies findings that demonstrated the effectiveness of Touch Math on individuals with special needs. Their study was conducted by recruiting four, third and fourth graders who had been identified as having a mild mental disability, learning disability, or other health impairments. The participants spent 14 weeks learning using Touch Math with a "Mad Minute Addition Test" at the end of each week. The experimenters used the "Mad Minute Addition Test" to chart the progress of each student (Wisniewski and Smith, 2002). They found they all four students made marked improvement in their math scores as the weeks went by.

Additional Resources:

- Additional information about the TouchMath program: www.touchmath.com