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LOVE
I ~~Hate~~ Math!

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Revolutionary Common Sense by Kathie Snow, www.disabilityisnatural.com

IDEA (Individuals with Disabilities Education Act) states: "A child with a disability is not removed from education in age-appropriate regular classes solely because of needed modifications in the general curriculum." For example, a 10-year-old student should not be removed (or denied placement) in a fifth grade classroom just because he isn't reading at grade level—the class reading material (in this case) should be modified so he can "be involved and make progress" (per IDEA) in the fifth grade curriculum. This is one in a series of articles about curriculum modifications.

During kindergarten, my five-year-old son, Benjamin, and his classmates began learning math via "one-to-one" counting activities. Mrs. B stood at the front of the class, leading the kindergartners in, "one, two, three..." as each of the students counted the manipulatives on their desks. Benj, however, couldn't keep up. It was just too difficult to pick up the beans, buttons, or other small items. (He has cerebral palsy and has difficulty using his fingers for some activities.) By the time the teacher was on six or seven, Benj was still trying to pick up or release the second or third bean. My concern over his falling behind in math got my creative juices flowing: I sent his fist-sized Thomas the Tank Engine train (along with Henry, James, and the rest of the engines) to school. *Those* he could pick up quickly and with ease—using his whole hand, not just two fingers—and learn to count along with his classmates.

During the next three years, Benjamin, his teachers in the inclusive elementary school, and I arrived at other math modifications. We realized math can be hard to learn for students like Benj who don't write with a pencil, and therefore can't scratch hash-marks on the paper while "carrying," "borrowing," or performing other math calculations.

Computer math games were one solution. While Benj wasn't able to write with a pencil, he *could* use a computer keyboard. Later, his second grade teacher decided helping Benj learn how to find the right answer on a calculator was more important than spending hour upon hour on the mechanics of traditional written math problems. So as his classmates

used pencil and paper, Benj used a calculator and a computer.

We don't need to pull our hair out while trying to come up with curriculum modifications for math. Instead, we can focus on how the child learns best and use whatever assistive technology devices can enhance his learning.

Emerging mathematicians may need hands-on manipulatives that are both relevant and meaningful. Not only did Benjamin have difficulty picking up beans, beads, and buttons, *he wasn't interested in them!* He was *very* interested, however, in using his collection of Thomas trains! (An added, and unintended, consequence of Benj using the trains at school was an increase in friendships: all the little boys in his class wanted to come over and play with Benj's trains!) The type, size, and relevance of manipulatives can make the difference between a child learning math (in ways that make sense to him) or not learning math—and then being labeled a "failure."

Hands-on materials, combined with meaningful activities, can help a child learn difficult math concepts. (Math can be an extremely abstract subject for many of us!) Cutting an apple in half and sharing it with a classmate can be the beginning of making sense out of fractions. We can take the mystery out of math by recognizing that "math problems" exist in daily life, not just in math class. Following a recipe book while helping cook the evening meal is one solution. Figuring out how much money is needed to go to the movie is another:

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number of people in the family
x
cost of tickets
+
price of popcorn and sodas
=
amount needed for the movie

Board games, as well as games and activities that use playing cards, dice, or dominoes are also effective tools for learning math. And for some students, an abacus or similar device might be just the ticket to learn math. Everyone learns differently, so math worksheets should be discarded in favor of other means if worksheets or other traditional methods don't work for the student.

For older students (and many adults, as well), algebra and geometry may seem extremely irrelevant. (How many of us use algebra on a regular basis in our day-to-day lives? I'm not sure why algebra is still a *required* subject in high school or college!) Thus, at the higher math levels, we need to decide whether a student can and should continue in the usual math classes for his grade level or if other courses ("business" or "everyday" math, for example) would be more relevant. If a student *does* continue in algebra, modifications can be made via the use of calculators, computers, or other means. Many math teachers at the middle/high school levels permit—and some require—the use of calculators (fancy ones!) for all students. However, the teacher may *first* require that students master the computations by hand before a calculator can be used. But there's no reason why a student with a disability should not be allowed to use a calculator *at all times* (and from the earliest grades), as both an accommodation and a curriculum modification. A math tutor—a paid one or a fellow student—may also be very helpful.

Flip through a variety of different catalogues or Internet sites and you'll find tons of other ideas.

A cardboard pizza can help students learn fractions. Videos/CDs and all types of games for all levels of math are available. Computer software can make math fun and easy—as well as relevant!

And we also need to recognize when it's time to move on. For example, when my son was in the primary grades, his teachers and I spent an inordinate amount of time trying to teach him to tell time. In our home, we had just about every type of practice clock available to man: plastic ones, wooden ones, books with clocks in them, games with clocks, and more! But Benj just couldn't master telling-time in the traditional way. The solution was simple: a digital watch for his wrist and a digital clock for his bedroom! Once he was able to tell time *his way*, we moved on and didn't waste anymore of his time or ours on something that wasn't working. What difference does it make *how* Benjamin tells time, so long as it works for him?

Focusing on the long-term dreams of the student can guide our actions, and the student should certainly be involved in this process. I hope all families dream big and plan for their children to move on to post-secondary education (college, vocational trade school, etc.) or into the job of choice (instead of an adult day program or sheltered work environment).

If college/trade school is the dream, begin looking at the entrance requirements *now*—don't wait! The more time that's available to meet the requirements, the better! If a job right out of high school is the dream, what math skills will be needed? A baker needs certain skills; a car mechanic others. If a student doesn't acquire these skills during high school, he can learn them on his own with the help of his family, library books, computer programs, or a tutor (friend, neighbor, etc.).

Once we get the big picture in our minds, we can work in the short-term—semester-to-semester—to create modifications and provide the accommodations to ensure the student can achieve her long-term educational goals and her long-term success as an adult. And students who once said, "I hate math," may learn to love it!