

## Adult Perceptions of Their Abilities in Math

by Mary Worthington and Suzanne Duarte Jones

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### Mary's story

I was in my fifties when I decided to revisit arithmetic. I was considering teaching in public elementary schools, which meant passing a basic skills test since I needed to get a credential. The idea of a math test scared me a lot. So I took myself off to an adult school that offered remedial math for grown-ups.

Math always baffled me. It started with fractions. I just couldn't figure out how big numbers could mean little pieces. I learned to dread the teacher's impatience or scorn. By fifth grade I knew that I wasn't good at math. It was okay not to be good at math. I was a girl, and girls didn't have to fool with that hard stuff. A high school algebra teacher said as much, after watching my increasingly intense struggles with polynomial equations. He made a deal with me that he would pass me out of the class, if I quit taking up so much time asking questions to which he couldn't make me understand the answers. I gave up trying, buried my fear and incomprehension, and moved on.

Now I was going to have to face it. The pleasant woman who greeted me at the Adult Learning Center described the independent learning program in math and suggested that I take a diagnostic test. I knew that I'd never try again if I left now, though I was sorely tempted to flee.

Adding and subtracting was tough, but I could do it. When I realized how much trouble I was having with the multiplication tables I made a little chart on the edge of the paper to help me deal with sevens and eights. I was modestly pleased that, with the aid of my chart, I seemed to be able to do long division. I left most of the fraction problems untouched.

Then I had to turn in the test. The director of the center, Harriet, a polished and capable looking woman

of about my own age, invited me to sit beside her desk while she corrected the test. As I watched her red pen moving rapidly over the paper, I began to cry. The humiliation was overpowering. Here I was, an outwardly competent and successful adult, and this woman was going to find out that I didn't even know the sevens table.

Harriet didn't miss a beat. She stopped correcting only long enough to fish a tissue out of her desk drawer. "It affects a lot of people like that," she said, handing me the tissue for my streaming eyes. "Don't worry." After she finished correcting the test, she shoved it aside and grinned.

"Listen to me", she said. "If you follow our program and do the work, I promise you that you'll be able to pass that test. And more, you'll like math."

I stared at her with stark disbelief.

"I know," she said. "I didn't graduate from college until I was 43. I was terrified of math. Then I learned some important things. You can learn them, too."

"You probably have had two kinds of math teachers," Harriet told me. "The first kind is as scared of it as you are, and keeps one chapter ahead of the kids. The second kind really loves math and can't understand why you don't get it."

I nodded in recognition of my high school algebra teacher.

"But you got through school somehow. What that tells me is that you're smarter than the teachers. You figured out how to get by even though you didn't know what you were doing. Now you're going to learn what you're doing, and that math is fun. Nothing else you

study is as predictable. There are only two things you have to remember: know the rules and don't make stupid mistakes."

She briskly began to lay out my course of study. I would begin by making sets of small flash cards of the multiplication tables to keep in my car, my bathroom, on my desk. She gave me a copy of the mathematics continuum sheet outlining a step-by-step course, and a time sheet to record daily and weekly goals. I got my first book, a dog-eared copy of *Basic Skills with Fractions*.

As I drove home I felt the first glimmer of relief. Maybe I could do this after all. Harriet had. As I worked the problems in the book, I realized that I was remembering things I had long forgotten. Once I had known the sevens tables; once I had been an enthusiastic eight year old discovering the fun of manipulating numbers. I recaptured the childish excitement as I zipped through the fractions book. In a few days I was able to discard the litter of flash cards, (though seven times eight stayed stuck up on my bathroom mirror).

I was no longer taking the class just to pass the test. I was taking it because it was fun. I filled up yellow pads with neat rows of numbers and symbols, glorying in my ability to figure out how to come up with the right, and predictable, answers.

I took the California Basic Skills Test six weeks after I started the math program. I passed, with room to spare. You can imagine my delight!

I went back to college teaching a few years later. My students were planning careers working with children, and were, I assumed, math literate. Not so. It was surprising to find that I belonged to a large sisterhood of people who felt like math dopes. We were victims of what Elizabeth Jones and Renatta M. Cooper (2006) called schools' "incessant focus on literacy and numeracy out of context, as drill," which "guarantees that they will remain meaningless in the life context of some children." Many of these children grew up to be people drawn to careers in early education, where, presumably, our inability to do high school algebra wouldn't be a serious handicap.

How could we, who believe in the power of play and the almost infinite ability of young children to learn,

avoid transmitting our disease to the children in our care?

We needed to change ourselves. Like my experience at the Adult Learning Center, teachers can figure out at about what age they turned off to math and find hands-on ways to ground their own skills and recapture the excitement of discovery.

## Suzanne's story

I, unlike many of my colleagues, enjoy math, though my experience with math did not begin well, and almost made me believe I couldn't "do math." My third grade teacher did not explain (and probably couldn't) the connection between multiplication and addition. She drilled us repetitively on the tables, had a chart of which tables we had "learned" on the wall, and held me in from recess day after day when I hadn't memorized them. We did not use math manipulatives or repeated addition at any time. Fortunately, we had math materials at home and I was able to figure it out without my teacher.

When I went to a new school in fifth grade I met fractions and realized that I'd been using them for years in cooking, a favorite activity of mine at the time. It made sense. I could see, smell, and taste the difference between a  $\frac{1}{4}$  cup and  $\frac{1}{2}$  cup of brown sugar. I cared if my food was too salty. I was ready to translate this understanding onto paper, and I did so. Math was self-paced in sixth and seventh grades, and I had a lovely time challenging myself to finish chapters and take the next test.

In eighth and ninth grades I had the same teacher for algebra and then geometry. David was a very funny, warm teacher. He had nicknames for all of us. He warmed us up each day with jokes and brainteasers. He obviously loved math and could explain it, too. I looked forward to class, and to the textbooks he chose that had math-related cartoons in each chapter. I tried to hide my high scores and love of the subject from the boys in my class who thought I was a geek. I managed not to sabotage my own grades in spite of my intense embarrassment whenever someone glanced at my test scores or heard David compliment me. Years later, one of my older brothers went back to college. One day he was grumbling as he did his homework for a math review course he was taking — "Who remembers how to do polynomial equations —

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this stuff is pointless.” I gave him a quick refresher, having truly understood David’s wonderful and very humorous lessons.

When, even later on, I took a math methods course for my teaching credential, I found myself in a class full of women. Almost everyone but the instructor and I were terrified of math and the course would be torture. I looked forward eagerly to each class — math games, math literature, brain teasers, and puzzles. By the end, most of the rest of the group was enjoying the class, too. Our instructor, Shana, whose enthusiasm was contagious, and she took very seriously the idea of constructing understanding through hands-on exploration and the building of a math community. During each session, at least one person joyfully exclaimed that she now understood a previously mysterious branch of math.

I now teach a pre-k/kindergarten class, and I make an effort to share my enthusiasm for math with the children in my class and help them to approach mathematical problem-solving with confidence. I start by involving children in the use of math in relevant, real-life situations — “How many children are here today?” How many plates and cups do we need in order for everybody at the snack table to have one?” “Please pick up five toys.” I use math games at large group time — “If you have two sisters, go wash your hands.” “Find all the fours.” “Everyone with red on, stand in this line. Everyone wearing blue stand here.”

Our classroom has many materials for counting, sorting, classifying, patterning, and sequencing —

shells, stones, buttons, tiny cats and dogs, pattern blocks, colored wooden cubes, attribute beads and pegboards, Cuisenaire® rods and unit blocks. Children use measuring tools in cooking, to find out how tall they are and how much they weigh, and in play with a variety of materials. They do puzzles and play board games, card games, and dominoes. They use toy cash registers, play money, and real calculators in dramatic play. Their journals and artwork are dated “so we’ll know when you made this.” The children take charge of counting how many children are in attendance each day and of updating the calendar.

As the school year progresses, Diego dates his own journal — “I just looked at the date on the Morning Message.” Jessica exclaims joyfully, “I know five children are missing ’cause only 22 are here today.” Gus drags his mom over to the marks on the pillar of our loft — “Look! I grew three and a half inches this year!” Katherine adds a five next to her signature “Cause I’m five now.” Block buildings become complex, pattern block patterns show several kinds of symmetry at once, and children demand 100 piece puzzles saying the 50 piece ones are too easy. Numeracy is now fully integrated into each child’s day at school.

## Reference

Jones, E., & Cooper, R. (2006). *Playing to Get Smart*. New York: Teachers College Press.

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Using Beginnings Workshop  
to Train Teachers  
by Kay Albrecht

**My story:** Everyone has a math story — some good, some not so good. Take the time to share some teachers’ stories before you delve into the training activities in this issue of Beginnings Workshop. Divide teachers into small groups of 3-4 to share their stories with each other. Then, ask one teacher from each group to share his or her story with the larger group. When we tell our stories, we can see what happened and what we want to prevent from happening in our classrooms. Finish up by asking teachers to reflect in writing about what they learned from the story sharing and what they plan to do with their new awareness of how we come to love or hate mathematics.

And, maybe, just maybe, this sharing will encourage another talented, but non-degreed early childhood teacher, to go back to college to earn her degree because she no longer has to be afraid of algebra!