The Psychology of Being Math-Blocked

Folks who are "good at Math" tend to think about things from the bottom up. They don't need a reason to solve a problem; the process of solving it, and reaching a correct solution are motivation enough. And bottom-up thinkers take pleasure in solving problems with a clear scope, like Math problems. So teaching Math the standard way, as a set of rules and problems to solve with no clear goal, is great for bottom-up thinkers.

But about half of us on this planet are top-down thinkers. We want to know what all these little rules mean – where we're being taken. For instance, if we're learning a card game, we top down thinkers will first ask, "What's the goal? How do you win?" A bottom up thinker will either ask that question later or never ask at all, figuring it out for himself as the rules unfold. So a top-down thinker says: Tell me the goal, then tell me the rules. A bottom-up thinker says: Tell me the rules, then tell me the goal. Or even: Skip the goal, I don't need it.

Bottom-up thinkers have another ace in the hole. Not only do they enjoy solving Math problems, but they also enjoy the extra status that comes with being Math-smart. In centuries past, only the elite were numerate. We still remember that in our mass consciousness today. It takes the form of a belief that few question: that only special people understand numbers; people of superior intellect and status.

This is a tremendous confidence-builder for bottom-up thinkers, empowering them to believe they can accomplish anything they wish. Such beliefs are self-fulfilling prophecies. It is a great gift.

How is it that this belief is so powerful? Modern neuroscience and psychoanalysis tell us that the human mind does not experience the world as it is. All sensory data is brought in and compared to prior concepts in memory in order to be understood. A match does not have to be perfect; the mind is satisfied with a close approximation.

So if you see something human-shaped walk past you out of the corner of your eye, your mind is going to approximate (assume) that it's a person, not an alien from Alpha-Centauri. Only if you look up and see an alien, decide it isn't someone wearing a Halloween costume, or a human who's undergone radical surgery, will your mind consider creating a new category: alien.

Since most of our experiences aren't that extreme, we are quite likely to misfile new experiences under inappropriate categories. For instance, if you meet someone new and that person reminds you of someone you adore, you're likely to take a strong liking to him even if, in reality, he's the town bully. (Eventually, your experiences will probably adjust that perception, if you're relatively sane.)

We do the same types of approximations with all of our experiences; it's simply how the mind works (to the best of our present knowledge). Here's the interesting fall-out: These

approximations are what we believe is true in the objective world. What we believe to be true has more influence over what we experience (feel and think) than what is actually happening in objective reality (if such a thing even exists). So if a student believes himself to be brilliant and special, it is likely to have a strong impact on his actual day to day experiences. Such a person will most likely perform better than someone who believes himself to be less intelligent, even if the two people have the same IQ.

Here's the problem. Top-down thinkers, no matter how intelligent, often experience the opposite of bottom-up thinkers. Without Math skills, they sense they have a lower status and lower intellect than their Math-savvy schoolmates. They feel disempowered and unable to achieve their dreams (or worse, feel undeserving). Those who find a path of expression separate from Mathematics can achieve, innovate, and communicate. But our existing system produces this result only rarely.

Those who teach Mathematics are also most likely to be bottom-up thinkers. Textbooks, also, are written from that perspective. Thus, every available tool is directed toward the empowerment of bottom-up thinkers and the disempowerment of top-down thinkers.

BUT Math is critical to self-determination! In Science, Engineering, Business, Finance, Navigation, Construction…well, pretty much everything – Math is the foundation for measurement, planning, organization, communication, and much more. So we must make every effort to teach Math to every student. It is key to his autonomy in adulthood.

So what can we do to empower top-down thinkers to become Math-skilled?

Step one, beyond a doubt, is to STOP believing and stop preaching that Math is for the select few. Every person who can learn to read can also learn to do Math. It is a natural skill for humans to acquire. If it weren't, a lot of people couldn't even tell time. (That's the key to understanding the psychology of the Math-blocked – for Math that isn't viewed as Math, the problem doesn't exist).

Teach the student about the elitist history of Math and allow her to drop that belief, too. Make it clear that Math is just like reading or business – a creation of Man, not a mystery of Nature; it's just a set of rules we made up that enables us to easily count and measure things.

Give the top-down thinker a structure for Math; tell her in detail how we use it, how it has formed the very basis of our civilization.

And suggest a bit of faith. Instead of over-complicating Math by trying to comprehend why 2 x 4 = 8, trust that the best way to gain that understanding is by simply doing problems. Lots of them. It's in allowing numbers and Mathematical rules to seep into the mind over time that we're able to gain the deep underlying meaning. Yes, it's there. Despite the fact that Math is just rules we made up, the deeper meaning is there. But it's too big to teach easily. So let it come to you, instead.

These are my suggestions for empowering your top-down thinking child to grasp Math. Does this mean that every Math-blocked student is a top-down thinker? No, unfortunately not. People are too complex for such one-size-fits-all answers. But if you hear your child asking questions like, “Why do I have to do these problems?” and, “What’s Math have to do with my life?”, you probably have a top-down thinker in the house. And now you have ways to inspire him.

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