

Thinking Straight

Following is a description of a way to improve yourself. It is called **Thinking Straight**. It uses a combination of: drawing, arithmetic, and a discussion of inspiration. It can be found at <https://www.redshirt.org/shorts/>. It is based on teaching experiences between 1976 and 2018 that are described in the paper, "A possible relationship among emotional intelligence, STEM, and algebraic scores in prison" that can be found at <https://www.redshirt.org/longer-writings/academic-articles/>.

The main thing in this Thinking Straight program comes from facing your self-worth. If you do not believe in yourself, there is little chance that you can change your thinking. But – remember this – everyone has the ability to believe. I will show you scientific studies that prove that your abilities go up when you believe in yourself. Every person – YOU - can believe that you are worth it. You can always increase your worth, your thinking, and your abilities, by increasing your belief. This is called inspiration – and we all need it – and we can all have it.

Math Phobia ... a true story from *The Next Version of YOU – Chapter 6* (Bickart, 2018, pp. 69-82)

What is math phobia? Robert had a whole book about it. He showed it to me, I think it was sometime in the first week of classes. "Trust me, Dr. Bickart, I have math phobia. And it's real!"

I looked him in the eye and said, "I really don't know about such things. But I know what I'm going to do. I'm going to respect you, watch you, and give you everything I've got. But I really don't know about that math phobia. To tell the truth, I don't think I believe in it. Not for you. Maybe for someone else, but not for you."

"But you don't know me. I've had it since I was young." Robert was 47 years old. "Trust me, Dr. Bickart. My teachers believed in it, my parents believed in it, and I've tried for years, here in prison, to shake the problem and I know I just can't do any math beyond arithmetic."

Robert explained how algebra was definitely in the phobia area. My job, however, was to get Robert to qualify for college level classes, so that when he got out of prison he could go to college. Robert was one of 16 men I had in class for six hours a day. But we had more obstacles than math phobia to overcome. Our classes were right here in the prison, so we had the comfort and protection of our dysfunctions. Basically, everywhere around you were reminders that you could not succeed. The prison guards made you feel you were unworthy of respect. The walls and fences reminded you that you did not deserve to move on. And the other inmates' convictions were a constant reminder that you had done something bad and probably could not change. My job was to take the time from September until December to go around, against, over or under those reminders so that the guys could pass a test. An algebra test. For college.

"Dr. Bickart, don't get me wrong, sir. I'll do anything you say. I just know that I can't do certain kinds of abstract thinking. My brain just doesn't do it. I test somewhere around the level of a grammar school math student. I've been in prison, released, and sent back to prison. I would like not to come back a third time. But I don't think I can do math, so ... isn't there a way around that part of the test? I'll do anything extra if we can just skip the algebra."

"I don't know, Robert. A way around the test? I'm not sure about that. But, I do know this. I am so glad that I met you. You just gave me a chance to grow. Don't you see, Robert? You're the poster child for math phobia. You said it, defined it, believed in it, and you're real, standing in front of me right now, right here. You just gave me - and the whole class - and yourself - a gift. You gave us the key to everyone doing well. Basically you handed us our success on a golden platter. After your objections, I don't think anyone else can top your conviction about math. If we can unlayer your belief that you can't do it - your disbelief – I'll bet we can get the whole group to pass the test. Thank you. I am sooooo glad we have met."

Clearly Robert was not prepared for this answer. You could see him retreat, already beginning his preparations for the next battle. Oh yeah, he wasn't done. It wouldn't be that easy. After all, if someone could walk up to him and say a few flowery words, he would have found answers long ago. No. Nevertheless, Robert remained polite. He said something like, "Thank you Dr. Bickart." But, his whole being was saying, "Sure, sure. That's what you think. I'll show you. I'll fail. I'm good at failing and I know it; and you can't stop me." And he was good to his word, that is, the words he thought. He tried to have

problems in class, after class, and at night when he worked on his homework with a buddy inmate, Michael. Michael would come to tell me how Robert just couldn't do it.

I asked Michael, "Do you think he really can't do the math, or do you think he stubbornly believes that he can't do it, and we are battling a conviction, without even finding out his true abilities?"

Michael thought Robert was being stubborn. "But Dr. Bickart, Robert's an old coot. He might not break out of such ingrained habits."

"Yeah," I said, "it looks like he's stuck, doesn't it? But how things look on the outside and how they really are behind the scenes are two different things. I don't know." Michael kept working on Robert at night, and I kept on him in class.

At the six-week point in the semester, around mid-October, we were to have a pre-test to see how the guys were coming along. As the test approached, I made sure that all of the types of relevant math problems were introduced. Several guys were making strong complaints by now. What started out as 'not so bad' was becoming 'that algebra!' You have to understand, they were using it like a curse-word. They were not allowed to use any form of profanity, so they simply looked at me each day and said, "Dr. Bickart, is it time to do that algebra?" I don't know how, but they could make you afraid when they said it, like a threat and a curse and something you better-not-do-or-else. And they ganged up on me in a subtle way, where one guy would say it, but they would all look at me in unison and put the pressure on. I guess you had to be there to feel the pressure. And Robert. Oh man, he was digging his heels in. His polite objections were becoming serious displays of emotions and sighs.

Finally, one day, Robert threw his pencil down and said, "I just can't do this stuff!" Mind you, he had come along somewhat. He had actually made some progress on certain portions of factoring polynomials. And that isn't easy. But he was throwing up his hands on the problems where he had to simplify complex algebraic fractional expressions. (I hope as I write this, that the reader is reminded of fond memories of math classes.) So clearly, it was time for me to raise the stakes. Up till now I had used cautious encouragement, but as they responded with increasingly negative feedback, I felt the need for a change in direction.

I launched an attack. I came in from three doors. I said out loud to the group, "Look! The mid-semester test is in a week. You are all going to qualify. We have until December, but we are not waiting until then. We are going to kill this thing now." That was the first door. Then I said, "Robert. See me after class. You are going to do this." That was the second door. "And I'm increasing the homework. Work in groups at night and get this done. Do not wait for me. Do it yourself. You all have the ability. The only blockage is belief. Do you or don't you believe you can do it?" And that was door three. Door three was belief. Door three is always belief. When all else looks as if it is failing, I fall back on belief. If I can't see outer signs that things will work out, something inside tells me to try belief. I guess it's a good idea. After all, when the answers are not coming from something in sight, where else is the only hope of an answer? Plus, I somehow actually did believe they could do it. How? I don't know, but a prompt seemed to come into me at this moment, and it said something like, "Tell them to believe in themselves." So I did.

Now I had to talk to Robert after class. You have to understand something about Robert in order to understand how our conversation went. Robert always agreed a little too quickly with everything you said. He was passive aggressive. He chose to disagree with you in secret, behind the scenes. So, when we talked and he outwardly defied me, it was really interesting. "Dr. Bickart. I respect you, but I told you there were things I just could not do and here they are. I just don't think you should try to push me any farther."

"Alright. Then, how about this? You push you. What about that?"

"What?"

"You push yourself," I said. "You know how you always agree with everyone so much? Well I think you're actually saying, 'I disagree!' I think you are using an incredibly stubborn will to defy lots of people, a lot of the time." I told Robert this because I had observed how he was always alone, fighting against tall odds. In his class, Robert was one of a small number of incarcerated individuals for several reasons: his religious beliefs, his sexual orientation, his race, and his age. He handled being the odd man out by agreeing quickly with anyone who showed signs of opposition. But he always agreed too quickly and too much. I think he was using a great deal of restraint to act passively when he really felt aggressive. So my comments were basically saying, 'I see you.' I was calling out his stubborn - but very strong - ability to remain staunch in his beliefs.

He got pensive. I went on. "I think that you are constantly saying to the world, 'Go ahead, I dare you to try to move me. I'm not going anywhere!' And I think that takes real strength. I think that you are incredibly strong." Now Robert is looking at me with considerable intensity. Tears are welling up in his eyes. I have been speaking with some feeling. I launch into the next statements with even more feeling. "What if you take this defiant strength and decide to use it in favor of yourself instead of against the world? What if you tried on the idea that maybe you can do this thing, then redirect all of the power you are using to dig your heels in and throw it at the problem? Or, Robert - look me in the eye - what if you use your

incredible power to let go of your problem? Yes, man, let go of math phobia! I don't care if you have said it to yourself for forty years, since you were seven years old. I know, and you know that you are strong enough to perform the ultimate act. LET GO OF YOUR DISBELIEF!"

Robert didn't just agree; he looked me in the eye, then he spoke to himself as much as he answered me, "Yes," he said. Then he left.

The sixth week, the last week before the mid-semester test, Robert was a new man. All of a sudden his head was down over his paper, and his pencil was flying. His voice was calm and firm. He was trying. He was moving on. He was either beginning to believe or perhaps letting go of disbelief. Whatever it was, it was contagious. The whole class felt it. The group got more intense than ever. Let me take this moment to say to you what I repeatedly told the algebra class. I don't care about algebra. I don't even think it should be a required subject in schools. I think that we could construct a great curriculum to teach students to think logically and do the necessary arithmetic to get by in life without algebra. But the fact is that almost 40% of the formerly incarcerated population in the U.S. experiences recidivism - they go back to prison. And so, for now, if mastering algebra represents a step in believing in oneself, I say, "Bring it on." If we can metaphorically conquer some of our demons by doing some challenging math, why not head into the storm?

A week later officials from the state administered the test. 100% of the 16 students scored high enough to be eligible for college work. This was a 46% increase from the pretests that were given before our semester began. Several students' scores were so high that they were out of the range of the test. This caused a problem in that there would be no way to measure their progress from mid-October to mid-December, when the course would be over. So a second test was given the next day, the highest test available. Again all 100% scored eligible, and even more students - 75% of them -- scored out of range. I wish you had been there to see the students! They did not look like the inmates I had met six weeks prior. Robert looked like a new man. He might have been the most gratified of all of them. He stood tall and walked tall among the others, part of a group he had never thought he belonged to.

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So, what have we learned here? That opposition and alignment must go hand in hand. Robert had a powerful passive aggressive nature that was oppositional. But he was playing this hand alone and it was undermining his ability to be whole and align with himself. He couldn't believe in himself because he was so busy opposing math, it leaked over into opposing Robert himself. But, on the other hand, he couldn't simply go over to alignment and believing in himself; he had to access his strength in opposing things to make a forty year change like that! So, here is Robert - the (47 year old) poster child who - perhaps for the first time in his life - used both opposite sides of his nature to conquer his math phobia!

It's interesting. Research has increasingly shown that the human brain needs both the left side and right side in concert to function. Traditional studies have shown the left side to be good at separating things by seeing one idea as opposed to another. This side is great at math, analysis, and mechanical thinking. The right side sees all those separate parts as a whole. It is great at aligning ideas, intuitive leaps of thought, and seeking relationship and unity. But the more we research the brain, the more we see how one side needs the other. It's fascinating to read some of the case studies of people who have had a brain injury to just one side. These studies clarify the differences I've mentioned, but they also underscore the interdependence. Robert was in prison for the second time. He was 47 years old. He had to be careful. His oppositional nature had to be employed to 'watch his back'. So he had plenty of exercise for his oppositional tendencies. Therefore, it looked to Robert like a sign of weakness to let go of anything. Even letting go of his disbelief in math phobia felt to him like giving in.

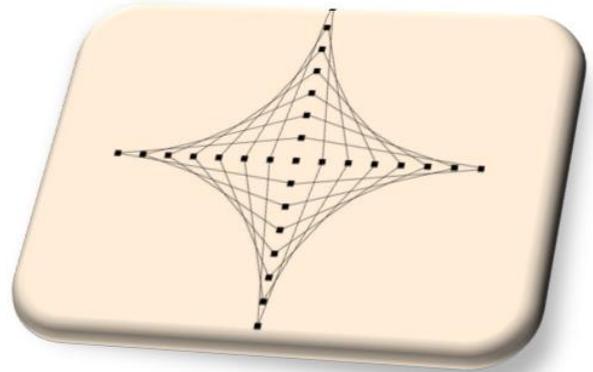
So, it took a moment of intuitive teaching to meet his challenge. Intuitive teaching marries right brain alignment to left brain opposition, and that is what enabled me to have the needed commitment to Robert and conviction that he could succeed. This conveyed a strength to believe in himself, which he could not muster on his own. Lacking those qualities, I might have said the same words, but without the same effect. His over-emphasis on being an individual had him shooting himself in the foot, when he wanted to believe that he could let go of his math-phobia. Yes, he needed to hold onto a firm lookout for danger and be his own man; but he also had to let go of forty years of rigidity. And he did. I believed in Robert, and Robert taught me that even a forty-year habit of disbelief could be transformed. And I have grown because of that. Thank you, Robert. (Bickart, 2018, pp. 69-82)

The Thinking Straight Way

So, let's get on with it. I'll keep reminding you about inspiration, then we'll do some arithmetic together. Get ready to see improvement. I have helped students from 3rd grade to adult increase their ability to do algebra, just by doing arithmetic while working on their self-worth. But before that, let's start with some drawing to warm us up.

Every form is made out of two things and two things only – **straight** and **curved** lines.

Some would say that straight and curved lines are the Divine way of re-creating creation! Ancient cultures drew linear forms, which became symbols, which became written alphabets. The Renaissance mathematician and astronomer, Johannes Kepler (1571-1680), said: "...God in His ineffable resolve chose straightness and roundness in order to endow the world with the signature of the Divine."



So, if you want to give your life a lift - try sharpening your thinking, by sharpening your pencil. Here are some great (and fun) exercises to make beautiful designs and do some simple arithmetic. But watch out - you may just be learning how to think straight, walk straight, and straighten out a few bumps in your life!

Dimensional Analysis

This is the arithmetic part. It's called Dimensional Analysis. It may sound complicated, but doing it is really quite simple. I have taught this to many students from 3rd grade to adult and found that everyone I have ever taught it to could do it. Instead of talking about it, let's jump in. Say you wanted to calculate how many inches are in a mile. Here's one way to do that ...

1. How many inches are in a mile?

$$\frac{12 \text{ in}}{1 \text{ ft}} \times \frac{5,280 \text{ ft}}{1 \text{ mi}} = \frac{\text{in}}{1 \text{ mi}}$$

2. How many minutes are in a year?

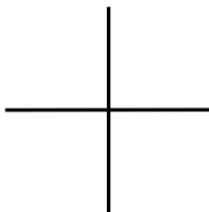
$$\frac{60 \text{ min}}{1 \text{ hr}} \times \frac{24 \text{ hrs}}{1 \text{ day}} \times \frac{365 \text{ days}}{1 \text{ yr}} = \frac{6 \times 10^5 \text{ min}}{1 \text{ yr}}$$

Straight Line Thinking Exercises

These are great EXERCISES that do wonders while you are having fun! It may sound like these exercises are too simple to have anything to do with math or arithmetic – but trust me, they do. Do them before you do math and watch your thinking become

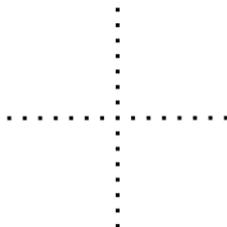
clear and straight. *And watch your math get easier!*

Exercise #1 Draw a
If you went up or down, now
sign.



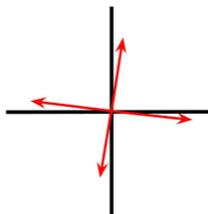
straight line with your own hand that is about 4 inches long.
do it again from side to side. It should look like a giant plus

Exercise #2 Do the same as Ex. #1, but
that are in line.



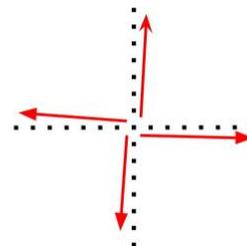
instead of drawing solid lines; make dots

Exercise #3 Now, make the same plus sign; but start at
four two inch lines that go out to the four directions.



the center dot and make

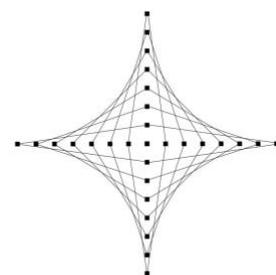
Exercise #4 Now do Ex. #3 with dots.



Exercise #5 ***Curved lines from straight lines!!!***

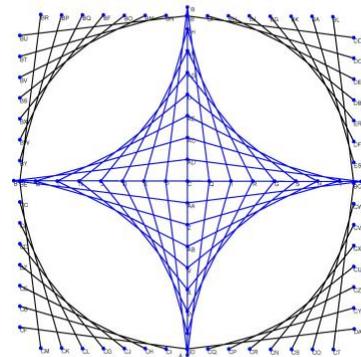
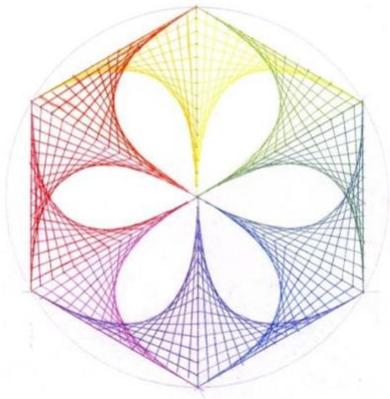
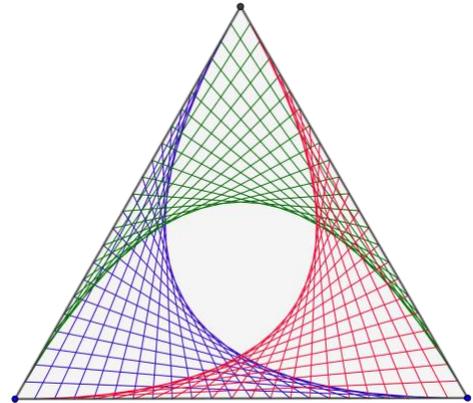
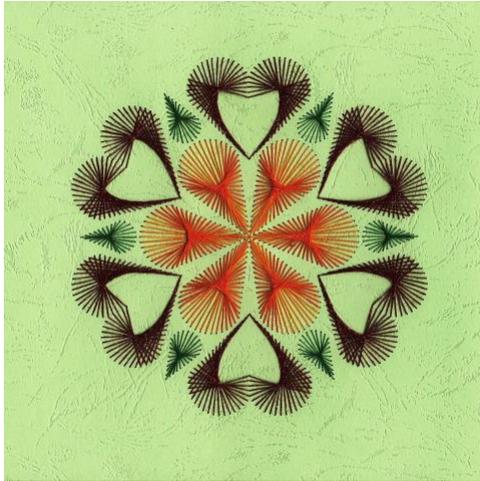
Here's the last exercise. This one is harder; but it's really fun. You're going to end up with a plus sign of dots of the same size; but this time, all four lines going out from the center will have exactly 8 dots. Here's how:

- Start by making the center dot.
- Now, go to the farthest end of your line and make a dot.
- Now, picture your line and make the dot that is half way.
- Now, make the two dots that are half way in between your two spaces. You should have 4 dots.
- Now, make the 4 dots that fill in the half way spaces. Your first line is done – it should have 8 dots.
- Now, make the other three dotted lines the same way – each should end up with 8 dots.
- Finally – *and here's the fun part* – connect the farthest out dot in each line to the closest in dot by making a solid line. Keep connecting the second farthest dot to the second closest dot, then the third, and so on. You should get this great design. It appears to have curves!



String Designs

We may make some of these designs with string or pencil. It improves your ability to think straight.



References

Bickart, J. (2018). *The next version of you: 12 stories that highlight the use of intuition to update your life.*