



PUBLISHER'S BRIEFCASE

THE ENIGMA OF MOTIVATION

In my article “Inspired STEM and STE(A)M Leaders Teach, From the Inside-Out” I made a comparison between how a computer company like Apple sells its products and how we can apply that simple rule to our way of teaching and inspire young people more. This time I want to tell you a different story. I want to tell you a hard-headed, evidence-based story for rethinking how we teach today and, maybe...just maybe you might not like to hear this awful tasting medicine.

The body has limitations, the brain does not!

Let's briefly take a look at a cross-section of the human brain. From the top down, the human brain is actually broken into 3 major components that correlate perfectly with the world's most simple rule, 'why, how, what'

Our newest brain, our Homo Sapien brain, our neocortex, corresponds with what level. The neocortex is responsible for all of our rational and analytical thought and language. The middle two sections make up our limbic brains what is responsible for all of our feelings, like trust and loyalty. It is also responsible for all human behavior, all decision-making, having no capacity

for language. In other words, when we communicate from the outside in, from the what to the why, yes, people can understand vast amounts of complicated information like features and benefits and, facts and figures. But it does not drive behavior.

In the moment we learn how to communicate from the inside out, from the why to the what, we are talking directly to the part of the brain that controls behavior, and then we allow people to rationalize it with the tangible things we say and do. This is where gut decisions come from. And the best we can muster up is, sometimes you are leading, teaching with your heart or soul.

Unfortunately, and I hate to break it to you but, even though a teaching path looks logic and coherent to you, it might not be the case on the receiving end of the equation. I mean, if you do not voice why you do what you do then how will you ever get your students to listen to you, or learn something from you, or, more importantly, be driven and passionate about what you teach?

The goal is not just to teach young people to absorb the knowledge you possess; the goal is to

teach young people to experience your passion and create the opportunity for them to explore and expand their creativity and critical thinking. Because these are some of the ingredients for solving problems in an effective way.

The problem might be you

I know, it is always an unpleasant moment when realizing you might be one of those radars that maintained a problem. Let me give you an example of how it is possible we maintain or, even create a problem by overlooking the obvious.

In the 18th century there was something that spread across Europe, and eventually made its way to America. It was called 'Puerperal fever' aka the 'Black Death of Childbed'. Basically, what was happening, women gave birth and died within 48 hours after giving birth. This Black Death of Childbirth was the ravage of Europe and it got worse and worse over the course of over a century. In some hospitals it was as high as 70% .

But this was the Renaissance, the time of empirical data and science in where we had thrown away things like tradition and mysticism. Then there were these men of science who wanted to study these cases, trying to find the reason for this black death of childbed. And so they got to work. They studied the corpses of the of the women who had died. In the morning they conducted autopsies and then, in the afternoon, they delivered babies and finish their rounds.

It wasn't until somewhere in the mid-1800s that Dr. Oliver Wendell Holmes, father of Supreme Court Justice, realized that these doctors, who conducting autopsies in the morning, were not washing their hands before they delivered babies in the afternoon. He pointed it out telling them that they

NEWS TECHNICAL JOURNAL, LLC P.O. Box 2028 Mableton Georgia 30126 <https://www.snchronicle.com>

were the problem. But they ignored him and called him crazy for 30 years. Until finally somebody realized that if they simply washed their hands and sterilized their instruments, the problem of these mysterious deaths was solved.

It was awful tasting medicine indeed. So, how can we prevent messy, narrow thinking events as such from happening ever again? And how can we covert that into a new approach in teaching STEM and STEAM subjects? Well, one of the best way to explain this is by using 'the candle problem' experiment.

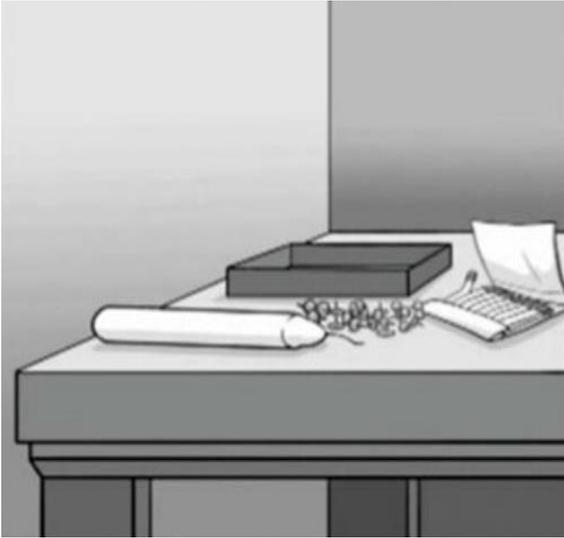
Creative minds see solutions

In 1945 a psychologist named Karl Duncker, created this experiment that is used in many other experiments in behavioral science. And here is how it works. Suppose you have been given a candle, some thumbtacks and some matches. Your job is to attach the candle to the wall, so the wax doesn't drip onto the table. Now what would you do?

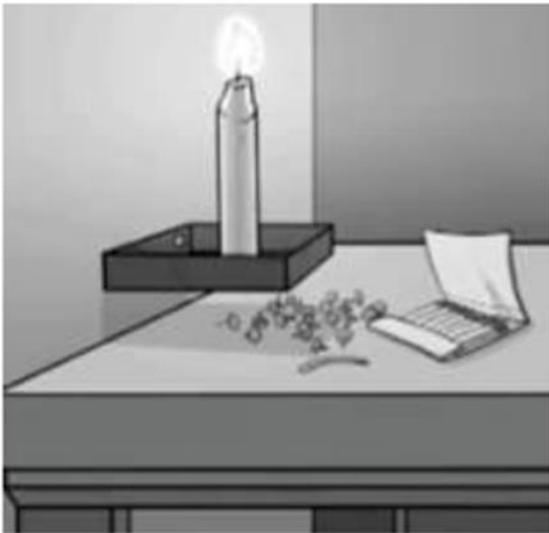


Many people begin trying to thumbtack the candle to the wall. That does not work. Some people have a great idea where they light the match, melt the side of the candle, try to adhere it to the wall. It is an awesome idea but, it does not work either.

Eventually, after five or ten minutes, most people figure out the solution, which you can see here.



The key is to overcome what is called functional fixedness. This means that you look at that box and you see it only as a receptacle for the tacks. But the box can also have another function, as a platform for the candle.



The power of rewarding

Sometime later Karl Duncker gathered his participants and said: "I'm going to time you, how quickly you can solve this problem." To one group

he said, "I'm going to time you to see how long it typically takes someone to solve this sort of problem." To the second group he offered rewards. He said, "If you're in the top 25% of the fastest times, you get five dollars. If you're the fastest of everyone we're testing here today, you get 20 dollars."

Now this was approximately 76 years ago and 20 dollars was a decent sum of money for a few minutes of work. It is a nice motivator. But how much faster did this group solve the problem? Answer: It took them, on average, 3.5 minutes longer. This makes no sense. That is not how it is supposed to work, right?

If you want people to perform better, you reward them with bonuses, commissions, their own reality show, it incentivizes most of us. This is how you bring people to take that extra mile, right? But that is not happening here. You have got an incentive designed to sharpen someone's thinking and accelerate their creativity, and it does just the opposite. It dulls thinking and blocks creativity. This is one of the most robust findings in social science, and one of the most ignored.

The solution is surprisingly easy

Rewards, by their very nature, narrows our focus, concentrate the mind and restricts our possibility for thinking in a creative manner. For solving a real candle problem, you do not want to be think like this. You want to let your mind wander around.

Think about your own work. Are the problems that you face have a clear set of rules, and a single solution or are they mystifying? Everybody is dealing with their own version of the candle problem whereby those if-then rewards, do not seem to work. The solution is surprising and not

obvious. What we truly need to apply to modern education...what really matters are the more right-brained creative, conceptual kinds of abilities.

So, if we really want to step off the rubble of the outdated teaching programs, if we really want high performance on those definitional tasks of the 21st century, the solution is not to do more of the wrong things, to entice people with a sweeter carrot, or threaten them with a sharper stick. We need a whole new approach in teaching young people.

The good news is that the scientists who have been studying motivation have given us this new approach: intrinsic motivation. This is built around the desire to do things because they matter, because we like it, they are interesting, or part of something important.

A new operating system for STEM and STE(A)M leaders to apply to their teaching skills what revolves around three building blocks:

- Autonomy: the urge to direct our own lives.
- Mastery: the desire to get better and better at something that matters.
- Purpose: the yearning to do what we do in the service of something larger than ourselves.

And here is the best part. You already know this in your heart. The only thing you as mentor, a STEM and/or STE(A)M leader, need to do is to merge this science to your present teaching skills.

So, if we bring our motivation and passion into the 21st century, if we get past this lazy, dangerous, ideology of sweet carrots and sharp sticks, we can strengthen our education programs, we can solve a lot of those candle problems, and maybe -- we can change the world.

NEWS TECHNICAL JOURNAL, LLC P.O. Box 2028 Mableton Georgia 30126 <https://www.snchronicle.com>

Don't lose faith.

By Maria Anna van Driel,

www.nexttruth.com

About the Author



Maria Anna van Driel was born and raised in the Netherlands. After living in South Africa for 3 years (2008-2011), Driel returned to Europe and she now calls Germany her current country to live. Today, she is the owner, founder, chief editor, graphic designer, and publisher of "The Next Truth" magazine and, since January 2020, of the magazine "Young People Science". As a freelance investigative science journalist member of the German Association of Press Journalists (DVPJ), science writer, foreign correspondent, and columnist, Driel is known for combining accepted science with mind dazzling theories and paradoxes in an approach to blend acceptant science and noetic science, and to combat the borders of the boxed thoughts of the modern society.

Working in the midst of world-renowned scientists, she aims to enlighten and inspire both young people and the general public for contemporary science with equal measures of insight, humor, and deep human compassion. Maria Anna van Driel is a theoretical physicist, philosopher in science, and investigative journalist.

STEM NEWS TECHNICAL JOURNAL, LLC**Disclaimer**

Our documents serve as solely as information and should not be relied upon for purposes other than for public information provided through research and articles contributed to us by invitation. Our work product elements are not subject to copyright protection unless otherwise noted by authors. Any of our publications may be reproduced and distributed without permission from SNTJ, LLC. However, in the case to copyrighted images or materials from third parties, you may need to obtain permission for the copyright holder if you plan to use the copyrighted material.