

# 1ST MAKER SPACE

## CREATIVITY TRAINING 1:1



## Believing In STEAM

### Why Add Arts To STEM Education?

By Arlon Bayliss Artist, Designer, Educator, Creativity Consultant - 1st Maker Space: [www.1stmakerspace.com](http://www.1stmakerspace.com)

*By using hands-on, STEAM based curricula 1<sup>st</sup> Maker Space is shaping new educational frameworks for science, technology, engineering, art and math. Through exciting experiences with 3D printing and creativity training, they enhance each student's learning by unlocking their creative thinking and encouraging their ability to innovate.*

"...Technological changes, combined with population and climate changes, are affecting everyone on Earth and the outcomes are essentially unpredictable. What is certain is that in the next 50 to 100 years, our children will need to confront challenges that are unique in human history."

*Sir Ken Robinson - "Out Of Our Minds: Learning To Be Creative", 2001*

"The dogmas of the quiet past are inadequate to the stormy present. The occasion is piled high with difficulty. As our case is new, so we must think anew and act anew. We must disenthrall ourselves then we shall save our country."

*Abraham Lincoln - Second Annual Address to Congress, 1862*

There's a quiet revolution going on in education. Parents and teachers are realizing that kids are missing something very important. In this article I describe what's missing, what they are doing about it, and how 1St Maker Space is helping.

10 years ago, Ken Robinson<sup>1</sup>, a world-renowned expert on education, made a TEDTalk presentation. It's the most downloaded TEDTalk of all time; an estimated 100 million people have now seen it. His well illustrated and urgent message is this: **For the last 15 years our educational emphasis on raising standards through testing has resulted in children becoming progressively less creative and innovative.** Their ability to innovate and solve problems measurably decreases during their education. Importantly, this news comes at a time in the world when those particular thinking skills are needed more than ever.

He describes one experiment involving around 1,500 individuals over several years. Most kindergarteners (around 95%), tested very high for divergent thinking, a major component of creative problem solving. When the same kids were tested at age 10, only 32% could think in divergent ways, and when the test was applied to them as 15-year-olds, no more than 10% could. Worryingly, his research confirmed a trend that has led him, and now countless others, to believe standardized testing leads students to think far too narrowly. Thanks to rigorous testing they believe that for every problem there is *only one answer*. Schools are killing their creativity.

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“No Child Left Behind” educational initiatives, begun in 2002, clearly haven’t worked and a generation of students has suffered. Since around 2005, ideas to emphasize Science, Technology, Engineering and Math (STEM) education have gained popularity and acceptance. A major educational reform act (ESSA), signed into law late last year has solidified our county’s focus on STEM education. **But experts agree, STEM still does not address one major problem: Kids aren’t the creative problem solvers they could be. Not even by half.** No matter how well STEM is taught, very many capable students will still struggle to engage with class material, and will not reach their potential as a productive workforce. Why will these kids be left behind, and what can be done about it?

Sadly, Schools will be slow to act. The gears of academia and government move very slowly, For example STEM as an idea that began in the 90s, was enacted as educational reform only late last year. Any good ideas, even those with plenty of support, take a long time to find their way into nationally adopted curricula. This doesn’t bode well for current students, so some parents are doing what parents *always* do best; they are taking matters into their own hands and seeking other ways to ensure children get *what* they need, *when* they need it – and this is why 1<sup>st</sup> Maker Space was founded.

At 1<sup>st</sup> Maker Space, we believe in STEAM. We believe the missing ingredient that can unleash STEM learning and innovation can be found in “Arts”. STEAM has been widely adopted by institutions, corporations and individuals since 2012. One of its champions is Rhode Island School of Design, (see <http://stemtosteam.org>). Among the objectives of the STEAM movement are transforming research policy, placing Art and Design within STEM, and encouraging the integration of Art and Design in K–20 education.

The arts are fertile; they stimulate our thinking and encourage our creativity. They help us imagine, invent, refine and remember. They are a powerful catalyst for learning. **By including educational practices associated with the arts, we bring a key that helps it all makes sense, a key that opens up students to discover, absorb and synthesize learning, a key that unlocks their creativity.** We don’t teach students how to paint a portrait or carve a piece of marble - there are other great places they can do that. Instead, we introduce them to the same thinking skills that artists and designers use to ask important questions and generate new solutions, (think Apple and Leonardo, not Picasso and van Gogh).

Sure, some creative thinking occurs in STEM education, but incorporating the arts into STEM learning trains students to think “around corners”, imagine multiple solutions, and think “outside the box”. It requires and refines creative problem solving, STEM does not.

**Our students learn to think with their hands, they are critical *thinkers*, and critical *makers* too. They do this by learning how to use 3D printers, by hands-on experimentation, (we call it tinkering), and by engaging in fun creative problem solving exercises.** This all helps them see how considering context, materials, imagination, and self-evaluation can suggest new solutions to problems. In these ways, our cutting-edge teachers uncover and strengthen student’s natural, inventive creativity.

At 1<sup>st</sup> Maker Space, students have serious fun engaging in experiments designed to help them discover their amazing creative potential. They learn how to exercise and improve their inborn, innovative abilities, and they learn how to remember important problem solving skills, so they can be *much more* creative in their school years and beyond.

Arlon Bayliss  
Creativity Training, 1<sup>st</sup> Maker Space

*1* Sir Ken Robinson is one of the world’s most influential educators. Listed by Fast Company as “one of the world’s elite thinkers on creativity and innovation” and ranked among the Thinkers50 of the world’s top business thought leaders, he advises governments, corporations, and leading cultural institutions.