The TOP 5 myths about teaching STEM

1

In order to teach STEM, you have to focus on content and technical concepts.

The reality is — STEM is more than just knowing technical facts. It's about critical thinking, collaboration, and creativity.

Focus on skills to interact with scientific concepts; planning and conducting experiments, analyzing data, design thinking, and engineering design process.

2

In order to teach programming, you have to be an expert programmer.

The reality is that programming is more about computational thinking than it is knowing commands.

Programming languages are all different and are constantly changing, but if students can learn to think computationally (algorithmically/logically), they can apply it to any programming language.

3

In order to use hands-on learning, the teacher must have step-by-step instructions to guide students.

Not true! Students learn through failure.

Students need to be given an open-ended, engaging challenge that requires them to ask questions and try new things. Maker projects and the design process are great tools for getting kids to **learn through discovery.**

4

Failure is not a dirty word.*

"People are under enormous pressure, I think, to not fail. Parents don't want to see the pain of failure. The teachers punish you for failing. Your boss punishes you for failing. So people learn throughout their life gradually, to find all sorts of ways to not fail, which frankly is easy to do. But again, the unintended consequence of redefining success as lack of failure is that we quickly become so risk-averse and everything we do in life is only marginally better than what we did yesterday. Life is so short. We shouldn't waste any of it trying to do anything marginal."

—*Dean Kamen, Founder, FIRST®*

* Here's the link to the original article: http://www.zdnet.com/article/dean-kamen-wants-you-to-make-mistakes/

5

Students are creative OR logical.

The reality is everyone is BOTH.

Students are born creative and are taught to be un-creative by traditional education.

STEM education should reflect the real world: problems without right answers. Students must think through problems logically to create innovative solutions.

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