**What is the Future of STEM Learning?**

By [Matthew Lynch](http://www.theedadvocate.org/author/the-edvocate/) February 20, 2018



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STEM is ever-present in all parts of daily life in the modern world.  STEM jobs are more in demand every day and [expected to grow exponentially](http://www.sciencepioneers.org/parents/why-stem-is-important-to-everyone) over the next few years. However, STEM education in the U.S. has a long way to go. It’s become a well-known fact that most high school students are woefully unprepared for careers in science, technology, engineering, and math (otherwise known as STEM). [Students in the United States regularly score low on math and science tests](http://www.pewresearch.org/fact-tank/2015/02/02/u-s-students-improving-slowly-in-math-and-science-but-still-lagging-internationally/), lagging behind the scores of students in other developed nations.

This is despite the fact that STEM careers pay exceptionally well—[college students who graduate with STEM degrees earn quite a bit more](http://time.com/money/4189471/stem-graduates-highest-starting-salaries/) than their counterparts with degrees in other fields. This fact alone should leave no question about the importance of preparing students for careers in STEM.

To compete with global education leaders and produce STEM workers, American schools need to improve their approach to STEM education. My vision for the future of STEM education is for the United States to take the reins of innovation and start competing globally. To do this, we have to rethink the way we teach STEM subjects to K-12 students.

What should future STEM learning look like? Not an easy question to answer, is it? My thoughts: we must find new and innovative ways to engage students in hands-on and real-world learning activities, and we must do it fast.

**UL Xplorlabs, The Future of STEM Learning**

Over the last decade, companies have experimented with innovative ways to engage students in meaningful STEM learning. Thankfully, several of these companies are getting it right. One educational platform, [UL Xplorlabs](http://bit.ly/2rCOqlB), is doing an amazing job of advancing STEM education by persuading students to start solving problems via science. It is uniquely centered on engaging students in middle school, which is when interest in science starts to wane. Through interactive videos, instructional experiences, hands-on classroom activities and creative challenges, this free, STEM-focused experience:

* Builds scientific knowledge, passion, and commitment among students
* Aligns with the Next Generation Science Standards (NGSS), connecting disciplinary core ideas and crosscutting concepts
* Makes it simple to implement hands-on investigations in the classroom
* Shows students that by using scientific inquiry to ask why a phenomenon happens, they can solve real-world problems and create innovative solutions for a safer world
* Introduces students to the science that goes into safety engineering.

The cornerstone of the program is the [UL Xplorlabs modules](http://bit.ly/2E9giAs), which encourages students to use scientific inquiry to engage with new topics – inspiring them to think like a scientist, learn about and explain real-world phenomena, and analyze and extend results. It is a completely free, ready-to-use resource that meets Next Generation Science Standards (NGSS). The landing page for each module lists the specific standards that are covered. Each module comes with detailed teacher guides and student worksheets to deepen understanding of the topics covered. The modules include videos and interactive investigations designed to be applicable for an entire class or for students to engage with independently.

At this time, two modules are available. Each module uses the same format. Although both are dynamic, my favorite is the [Fire Forensics: Claims and Evidence module](http://bit.ly/2E82hD0), which is designed to provide students with the understanding of fire, fire dynamics and fire behavior, so that they can read a fire scene and build a claim for the fire’s location of origin and cause. Let’s look at a description of the [Fire Forensics: Claims and Evidence module](http://bit.ly/2E82hD0):

* **Investigators Academy:** Fire investigator in training! Build an understanding of fire science, so you are ready to identify and analyze fire scene evidence to solve a case.
* **Analyze the Burn Data:** The UL Fire Lab burns full-sized structures under different experimental conditions. Check out these two burns, side-by-side, changing only one variable – ventilation. UL fire scientists explain what you can observe in each burn. Following the video, analyze the data from the two different burns.
* **Investigate with an Expert:** Now you’re going to walk through a burn scene with an expert investigator and learn how to build a claim, explaining the cause of a fire and where it started. Fire investigators are trained to work backwards using the scientific method to fill in the story by examining the clues left behind.
* **Your First Solo Investigation:** Work your way through the burned structure to seek out every piece of evidence needed to determine the fire’s cause and place of origin. Build your claim for how the fire started by looking through the burn scene for at least four pieces of evidence and add them to your notebook to build your case using your training.
* **Submit Your Claim:** Using the evidence you gathered on your solo investigation, tell the story of what you think happened in the kitchen burn.

The modules are designed with flexibility to complement science, technology, engineering and mathematics curricula to bridge the gap between the classroom and real-world engineering challenges. Xplorlabs exposes exciting STEM career paths for students by connecting them to the work happening at UL. This creates a fun, interactive environment for students to learn from scientists solving real-world problems.

**Conclusion**

The engagement of U.S. children in STEM education is imperative to fill an [estimated 9 million jobs in the industry by 2022](https://www.bls.gov/careeroutlook/2014/spring/art01.pdf). Time can only tell how many STEM careers will be created in the years that follow. However, it is up to everyone to ensure that American students are prepared to compete for those spots.

With the commitment of parents, teachers, and communities, we can offer a more inclusive and effective STEM education to children. While improving STEM learning may seem like a lofty goal, organizations like [UL Xplorlabs](http://bit.ly/2rCOqlB) are up for the challenge. It is now up to us to make the changes necessary to realize a vision of better STEM education for American students.

What programs do you want to see incorporated in your local schools? Are you a STEM teacher, working on the frontlines to improve education? We want to hear your opinions and ideas.