A New Approach to STEM on Thinking, Teaching and Learning

Unless you've been living under a rock this past decade, you've definitely heard of STEM and how these four letters are shaping the modern education environments from curriculum planning to teaching methods. But what is STEM exactly? Knowing it's a growing phenomenon in recent years, University of Chicago Center in Hong Kong invited Jeanne Century, Director of Outlier Research and Evaluation at UChicago STEM Education, to give a public lecture on quality STEM education and its importance.

> *- Liam Kim, 2nd Year Student, Major in Economics & Philosophy*

STEM is so much more than just standing for Science, Technology, Engineering, and Mathematics. "Some people think of STEM without regard to discipline at all," said Jeanne. Instead, to these people, STEM is a way of thinking, a way of teaching, and a way of learning.

As STEM becomes more essential, there are more STEM schools opening in the U.S. Apart from making an effort to define what a STEM school exactly is, Jeanne's team also tried to identify what characterizes a STEM school and how these schools are different from regular public schools. They have come up with eight elements commonly shared by STEM schools in one of their research called STEM School Study (S3 Study). They are problem-based learning, rigorous learning, personalization of learning, career, technology & life skills, school community & belonging, external community, staff foundations, and essential factors. Teaching is tailored to different learning needs of different students so that all students can maximize their skills and talents. Students at these schools feel like they belong and are treated with respect within their school communities, and all these learned skills and knowledge are further enhanced by interacting with external companies, community organizations, and government groups. And of course, teaching is done by qualified staff and supplemented with essential components like school resources and safety.

You may be aware that the above eight elements are not related to the STEM disciplines of science and technology and are even mostly non-instructional. Instead of providing what are traditionally thought to be the main pillars of STEM education, Jeanne's team focused on making sure that the students can learn constructively in a well-supported environment. The S3 Study shows that STEM education is not only about learning more scientific disciplines, but also providing an engaging, challenging, and both academically and personally rewarding education.

As a closing thought, Jeanne outlined some of the ways in which parents can help provide STEM education for their children. "First," she said, "start early." Children of today who will be the workers of the future face an environment in which a vast majority of the available jobs will require at least some form of STEM skills, especially computing. Second, advocate for STEM education for both your child and the larger community. Communicate to school officials that STEM education is important to you and that you want it in your children's schools. Third, encourage your place of employment to engage in STEM internships and mentorships. Lastly, keep encouraging your children to explore STEM in various ways, not just in its disciplines, but in its way of thought.

STEM – with its disciplines of math and science and even its instructional concepts – have been around for a long time, but the interest in these areas is skyrocketing today because people are starting to realize how fundamental and valuable skills in STEM are for employment, digital literacy, and life in the 21st century. So learn more about and advocate further for STEM education because STEM means good, quality education, and it's necessary for tomorrow's world.