



STEM Classes for Kids: Hurt or help curiosity?

Someone posed this question to me the other day: "My daughter is showing increased interest in math and science. Should I enroll her in STEM day-camps, after-school classes, or extra-curricular activities geared to STEM?" Which got me thinking, do children really need to be taught STEM learning, and do formal classes in STEM help or hurt children's curiosity?

When my son was two years-old, he loved those metal coiled, rubber tipped door-stoppers that went twaaaaannggg. He would play with them while lying on his belly on the cold floor, and the sound drove us crazy, because he would do it over and over again. He needed to reinforce those learning pathways in his brain, and he was accumulating experience of the door stopper workings, so that twenty years later, he would have first hand knowledge of the sound oscillations in his electric engineering class when he had to do the paper calculations.

As an unschooling mom to 3 children who chose STEM careers, I would say that you don't have to enroll him in anything. In fact, it may even be harmful to do so, in that the lack of experimentation could stunt his interest. Not all children take instruction well. Some children just want to follow their own agenda and experiment with their materials and ideas. Instead of prescribed classes, here is the best way to raise a child interested in STEM:

1. Say "Yes!" as much as possible. If he wants to build a potato gun, say yes. If he wants to take apart appliances or take the lid off the toilet to see how it all works, say yes. If he wants to attend a Maker Faire, take him. If he wants to open up a potion shop in your kitchen, say yes. If he has 7 train sets and wants more, get him more. If he wants to set up a workshop in your garage, say yes. If he wants yet another science or building kit, say Yes.
2. Buys lots of Lego, K'nex, Meccano and blocks. Let him combine toys. Nullify your need to sort and categorize. If he wants to put the playdough in sand or water to see what would happen, let him.
3. Let him spend as much time on computer as possible. Kids need to play video games to learn to code them. Don't limit screen time. Getting to know a computer and all that software can do takes time.
4. Take him to science centres, zoos and aquariums all over the world when you travel. Buy seasons passes to the local ones so he can go as often as possible.

5. Never shut down a question. Model, "Let's find out!" and take the time to help him get what he needs to find out.
6. Host special interest clubs at your home. Minecraft club, coding club, or a Beakerhead or First Lego League project can provide peer knowledge, fun, and social time as well as incredible learning from peers.
7. Take him to Kids Project Days at building supply stores. Many are offered for free. Be sure to back off – let him build the project! Hammering in nails crooked is a great moment in learning physics and should not be taken over by the parent. STEM education embraces mistakes, not avoids them. Perfection is not part of STEM; the learning is in the process.

The only thing you have to practice with him in your parenting is problem-solving, because the world of STEM is all about creatively solving problems. This may involve risk and mess, but it is free and has unlimited possibilities. Don't limit the exploration except for extreme safety issues. Even with reasonable safety issues, use the opportunity to teach about safety precautions and managing risk. Children are going to experiment with fire and water, and they critically need limits and supervision. Better they do it while you are around and not behind your back. (More about "The Power Plant" later!)

I am skeptical of all the classes and extra-curricular classes that are often structured and have very little creativity involved, popping up to cash in on parent's homeschool funding, or childcare budgets, and/or their anxiety that they should do more to encourage interests in STEM. Many of the extra-curricular classes are just like "more school." I was having a discussion yesterday with my engineering son and he said the one element that helped further his interest in STEM was having the "control." In STEM classes, the control is not with the students; it is with the teacher. In order to experiment, one needs to have the control to manipulate things, make hypothesis and plans, and especially carry out plan B. Lack of control is a big turn off, and kids take back control by losing interest in formal, structured, and planned outcome classes.

As well, most classes are geared to under-aged kids and liability issues will limit all the cool stuff that kids want to do. In school, the most my kids ever did was experiments with baking soda and vinegar. Boring. Parents at home, can accept the liability and their kids can do much more under their supervision.

As one mom said, "I couldn't agree more - my son who is now headed off to study physics at University hated his online high school physics courses but loves physics. I would like to think it might be because we owned balls and hot wheels and elastic and marbles and ... and that I sat in the driveway (as the safety monitor) while he lit things and launched things and built things that rolled and put his little brother in them and pushed him down the hill and I let him jump in elevators and watch Youtube videos of other people doing crazy things for the first 9 years of schooling. It all made high school physics easy but very dissatisfying. He is now looking forward to being able to study at a much higher level and with people passionate about this area."

If parents have a child geared to STEM, they will know it. Sure, some classes might be fun, but fund what the child wants to do, not what some advertisement says they need. This applies to any gender! If the class is awful, let him quit. You don't want to turn him off of a STEM interest with boring, limited, mediocre, controlled classes that will stunt them instead of empower them. Get them access to what they need, supervise the scary stuff, show them how to clean up, and get out of their way! Einstein didn't have STEM daycamps or extra-curricular classes!

By Judy Arnall, Excerpted from, *Unschooling to University: How to impassion your disengaged learner*.
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