EDMT627: Tech Talk Summary

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A Global Revolution Goes To School: The Maker Movement
Sylvia Martinez
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Sylvia Martinez used the talk "A Global Revolution Goes To School: The Maker Movement" to give an overview of the Maker movement to educators at the MACUL conference. Because I also was able to attend Ms. Martinez's pre-conference afternoon workshop delving into these same issue, I will also include references from that day's experiences in this report.

Ms. Martinez started by providing a summary of the Maker movement and its impact on education, stating that the Maker movement is "not just a global economic revolution, it's a learning revolution, too." She describes the Maker movement as a global, collective act of learning and doing.

Ms. Martinez then spent equal time discussing the technological tools used by Maker-oriented educators, and the educational impacts and implications of those tools. The technological tools she discussed focused on a number of categories, including computer controlled fabrication (such as 3D printers and subtractive CNC machines such as cutters and CNC mills), physical computing devices (such as the Arduino and Raspberry Pi platforms), programming tools (such as Scratch and Processing), electronics and related components, and traditional materials (such as cardboard and Lego).

Ms. Martinez broke down each category in varying degrees of detail, talking about the technical requirements for implementing them and the types of learning opportunities each brought along with it. She highlighted some of the best tools in each category, giving examples of how students are incorporating them into projects and meeting learning objectives.

There was significantly more audience participation in the pre-conference session compared to the one-hour session, as it was intended to be a workshop format instead of a talk. For example, she led an excellent discussion about several types of 3D fabrication technologies. She asked the group to consider two tools: a 3D printer, and a handheld 3D pen. She asked the group to consider the differences, similarities, and situations in which you might choose one tool over the other, and the technical and support environments necessary for each tool. This provoked an excellent conversation with the audience about these various factors. In general, the assembled group concluded that the 3D printer was a better tool when precise, repeatable fabrication was required, but that it required more time, support, and infrastructure. Conversely, the 3D pen was deemed to be a more freeform tool (like a paint brush) but with less precision and repeatability.

As you are already aware, I am deeply invested in using tools such as those described by Ms. Martinez, so the real value for me in attending the afternoon workshop and her one-hour talk was in the discussion of the pedagogical impacts of the tools. Through discussion with other workshop attendees and through the careful way in which Ms. Martinez laid out the implications of using these different categories of Maker tools, I was able to think more clearly and deeply about how and why I use these tools with students. Her examples of student projects for each category of tools was

especially useful, as it helped me think through different ways of using the tools than I might have otherwise.

For me, three specific quotes resonated strongly. In discussing a student who had built a Braille printer out of Lego, Ms. Martinez said "It's up to us to leverage the natural altruism in children to make the world a better place". I think this connection of tools to bigger social impact is really important. Similarly, Ms. Martinez said, "empowering students is about them feeling the power to do something that can be meaningful in the world". I see this as being perhaps the most important thing we can give students: the sense of what they can accomplish, and specifically that they can make an impact now, not just when they eventually become adults.

While discussing the importance of digital fabrication tools, Ms. Martinez said, "I guarantee you a 3D printer will not change education. The act of design, the act of making: that will change education". As someone who has started using 3D printers with students, it was really helpful to think about that tool in this way; the design work and the way this tool fits into that process is really the key thing, not the tool itself.

Overall, I was really pleased to have had the opportunity to learn from Ms. Martinez.