Looking Ahead

As I have mentioned elsewhere in my portfolio, after having worked in education and technology since 1985, my wife and I retired to Michigan to care both for aging parents and for our first grandchild. I like to practice what I preach, so I consider myself a lifelong learner (after all, I will be 60 when I graduate with my master's degree.) Consequently, in spite of the "R-word," the learning doesn't stop for me, but the decision becomes one of what to learn next. Since I have a passion for technology and education, exploring powerful emerging ideas in those areas makes the most sense for me. I have long relied on the International Society for Technology in Education (ISTE) as a source of innovative ideas for technology use in teaching and learning, and their 2018 article entitled "The 9 hottest topics in edtech" contains several. Three of those topics, computational thinking, augmented reality/virtual reality, and artificial intelligence, hold a particular interest for me, perhaps because they are the three from the list with which I currently have the least experience.

Computational thinking is a problem solving process that draws on skills also required in computer programming such as algorithms (using a logically ordered set of steps to solve a problem) or decomposition (breaking a problem down into component parts to make it easier to solve.) Other skills such as pattern recognition, analysis and abstraction are also characteristic of computational thinking. In part, it is the application of computational thinking to problems other than simply computer programming that makes it interesting to me. The idea of students (and teachers for that matter) approaching non-programming problems with a programmer's logic and strategy seems like it would be beneficial in much the same way design thinking has been applied to areas well outside the traditional domain of design. And, to be sure, both design thinking and computational thinking share a quite useful iterative aspect. I also appreciate the correlations between computational thinking and several of the skills described in my white paper on teaching creativity, pattern recognition and abstraction chief among them. In the same way I enjoy mixing technology and art, I would like to learn more about applying computational thinking to non-programming problems. Fortunately, Google provides a wealth of data and information to start me well on my way to better understanding and applying computational thinking in education. First, Google for Education offers a "curated collection of lesson plans, videos, and other resources on computational thinking (CT)." Second, Google also offers a free online course entitled, "Computational Thinking for Educators." I suspect these two resources will be sufficient to establish a deeper understanding of the topic and help me decide whether it is something into which I wish to dive deeper.

As a lifelong science fiction fanatic, the topics of augmented reality, virtual reality, and mixed reality (sometimes all generally referred to as xReality or xR) held a fascination for me long before they were publicly accessible or available. Augmented reality (AR) refers to technology that superimposes a computer generated image over a person's view of the world. On the other hand, virtual reality (VR) completely engulfs a person in a computer generated environment, perhaps via a helmet with a screen and headphones and a pair of gloves with sensors. Mixed reality (MR) is somewhere between AR and VR in that it also superimposes computer generated imagery over a person's view. However, in MR that imagery is digitally anchored to and interacts with the real world. My enthusiasm for xR in education lies in the opportunities for learning beyond the traditional classroom model making it far easier for situated and embodied learning to take place. Likewise, xR is one more example of how technology can be leveraged to further individualize a student's academic experience. And perhaps most exciting is the idea that learning need no longer be strictly tied to a physical classroom. Employing xR, students from around the world can collaborate on projects, engage with one another, or take advantage of a wide range of cultural and educational opportunities all without leaving their schools. Beyond personal experimentation with Google Cardboard or simply purchasing an Oculus Rift or a Microsoft Hololens to see what the major xR players can offer education, there are several resources I can look to today for ideas on how best to take advantage of this new technology. For example, EdTech Times has posted a 10 session podcast series on SoundCloud titled, "xR in EDU." Also, I am looking forward to reading Jaime Donally's book, "Learning Transported: Augmented, Virtual and Mixed Reality for All Classrooms," due out in March, 2018. Ms. Donally also wrote an excellent short article published on the ISTE website titled, "5 ways to move from experience to creation in AR, VR" focusing on students building xR experiences rather than simply consuming them. Finally, I will continue to follow Kazendi's work on xR across multiple sectors, including corporate and education, to see what a leading expert in mixed reality has to offer.

The last of my future learning goals topics, artificial intelligence (AI), encompasses a much broader range of application possibilities than the other two. In general terms, AI is the capacity for a computer to perform certain tasks which would normally be associated with intelligent beings, such as reasoning, decision making and even learning. Much like xR, AI has the potential to radically change what, where, when and how teachers teach and students learn. For example, AI systems programmed to provide expertise will further enable the ongoing shift in the teacher's role from content delivery to learning guide. Likewise, adaptive learning AI systems can individualize student lessons via ongoing formative assessment, freeing up valuable time for educators to focus on areas AI may be less well equipped to handle such as higher order thinking and creativity skills with their students. Artificial intelligence also holds serious implications for easing the administrative burden on staff at all levels within a school. The real power of AI is all in the data, and intelligent systems can help schools manage and manipulate the ever flowing tide of data generated by students, teachers, parents and others to improve education in ways we have not yet envisioned. With such a broad topic, it might be difficult to know where to begin exploring. As one might expect, Google offers a simplified look at what artificial intelligence can do via their Teachable Machine project. While that is fun to play with and explore, much of what I have thus far read about AI suggests that learning the Python programming language may be the best place to start due to its ease of use, efficiency and extensive current use in AI platforms. Several websites offer free lessons and tutorials on learning Python including Codecademy, Python.org, and even Google. And once I have some programming under my belt, there are multiple online courses for studying the applications of AI. For example, Columbia University in New York offers a free course via edX on the fundamentals of artificial intelligence, and the Open Academy offers a free course lead by MIT professor Patrick Henry Winston on artificial intelligence.

If I've learned anything in life so far, it's that regardless of what my current plan is, frequently the universe lets me know what it has in store for me next. Therefore, I have long figured that a good way to stay ready for whatever life throws my way is to just keep learning, and these three educational technology goals are an excellent basis for that practice.

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