Putting It All Together

I have always appreciated the perspective that time and experience have afforded me. It took 9 years after graduating high school before I earned my bachelor's degree. So perhaps it is no surprise that I waited another 33 years before earning my master's degree. The collection of experiences between the two degrees was invaluable in helping me understand the topics explored during Michigan State University's Master of Arts in Educational Technology (MAET) degree program and integrate them into my technology thinking, values, and behaviors. More importantly, the program itself presented me with several new concepts and ideas that continue to inform my views on education and technology.

While teaching in Bangladesh in the early 1990's, along with the school's technology coordinator, I pioneered a program at the American International School/Dhaka with the goal of deeply integrating technology into the curriculum. During that time, I trained secondary teachers in the use of specific applications and then worked closely with them in developing appropriate classroom projects utilizing those applications. The teachers booked lab time to bring classes in to complete their assignments, thereby enabling both teacher and student to learn the technology as a useful tool through direct application and in a very practical manner. For its time, it was a radical departure from how most technology was being taught in schools around the world. Some twenty years later, during my very first course in the MAET, CEP 810 - *Teaching for Understanding with Technology*, I was introduced to the TPACK framework[1]. TPACK, an acronym for Technological Pedagogical Content Knowledge, added a depth and rationale to my prior understanding and practice of significant, effective teaching both of and with technology. TPACK opened my eyes to the complex interplay between subject matter, pedagogy and technology. It shifted my thinking about technology education away from a simplistic desire to teach technology solely as a practical tool to be used as seamlessly as pencil and paper in the learning process and more toward the distinct affordances and constraints of various technology tools within specific teaching and learning contexts. Awareness of TPACK prompted deep discussion of pedagogical decisions with teachers in light of how using one technology or another might either help or hinder learning. Moreover, my role shifted from being an enabler or even a cheerleader for the use of technology in the classroom to one of a trusted consultant and advisor able to analytically explore the potential for the constructive and instructive use of technology to further pedagogical goals in the most effective ways possible.

While the TPACK framework itself was something of a revelation for me, these changes did not happen overnight. The complexity of the various inter-relationships between technology, pedagogy and content combined with the broad spectrum of possible

[1] For a complete explanation of the TPACK framework, see http://www.tpack.org.

contexts made for a stimulating yet challenging dynamic both to get my head around as well as to integrate into my philosophy and practice. But TPACK was only the first new idea I would discover and embrace from the MAET program. Additionally, *Teaching for Understanding with Technology* introduced me to another important line of thought in technology education, namely the Framework for 21st Century Learning[2] from P21.org. The Partnership for 21st Century Learning (P21) is committed to preparing students for the challenges awaiting them in this new century by changing the focus of what students need to learn to succeed both today and in a future that will change much more rapidly than it has in the past. To this end, beyond the usual mastery of fundamental subject areas, P21 promotes a variety of life and career skills, additional literacies (e.g., financial, civic, health, environmental) as well as information, media and technology skills. One focus of P21 which had a significant impact on my teaching and learning practice and beliefs were the "4 Cs" of creativity, critical thinking, communication and collaboration. While I worked as the Technology Coordinator at the Cayman International School (CIS), the principal school improvement initiative across all grade levels focused on 21st century teaching and learning. On a daily basis, the 4 Cs were discussed as commonly as the day's lunch menu. And, as the chief technology leader at the school, having knowledge and insight into their relationship with technology was more than simply useful, it was required. From the planning, development, and creation of both a MakerSpace and a STEAM Lab to advising student teams and coaches for Destination Imagination competitions to working with teachers to effectively integrate technology into their lessons, the 4 Cs of creativity, critical thinking, communication and collaboration took on a primacy in answering the whys and hows of so much that we did.

As a charter subscriber to MAKE magazine, I had a long familiarity with the Maker culture and ethos going back to 2005. However, it was CEP 811 - *Adapting Innovative Technologies in Education* that prompted me to explore the application of Maker concepts within an educational setting. And, as I alluded to above, studying and sharing Maker philosophy and ideas with fellow educators ultimately led to the creation of a dedicated MakerSpace within CIS. From a more productive personal perspective, CEP 811 and another course I took simultaneously with it, CEP 812 - *Applying Educational Technology to Issues of Practice*, set the basis for a valuable and rewarding couple years for me of blogging at Just Another Day in Technology (and paradise). While I had done a little intermittent travel blogging earlier in life, the requirement of maintaining a public social space to record my intellectual, academic, educational and technological progress through multiple MAET classes ended up being more than simply an avenue for submitting assignments. It became a truly enjoyable creative outlet for exploring new ideas and sharing my learning with not only my classmates but with my colleagues as well.

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[2] For more details on the Framework for 21st Century Learning, see http://www.p21.org.

Another positive influence I took away from CEP 812 was an introduction to the thinking and writing of James Paul Gee and, more specifically, his ideas on situated and embodied learning. Embodied learning asserts that since nearly all of our experiences are grounded in the body, learning is a bodily experience as opposed to, say, a strictly cognitive one. And situated learning is learning that takes place in the same context in which that learning may be applied. The key aspect being that situated and embodied learning implies that learning always occurs as an *action (bodily experience) within a (situated) context*. The truth of these concepts seemed inescapable when I explored how I myself learned best, and they continued to ring true as I applied them to multiple new situations. In fact, during the very next course I took in the program, CEP 800 - *Psychology of Learning in School and Other Settings*, as I was exploring how differences in teaching strategies affected learning, the concept of situated and embodied learning practically jumped out at me. While working on a video exploring how the student teaching experience generates learning in a pre-service teacher that is an order of magnitude greater than all of the theory classes that come before it combined, I realized that I was essentially comparing a situated and embodied learning experience with a primarily cognitive one. From that point on, I have always attempted to discover or create learning experiences that are both situated and embodied. Such was the case later in CEP 800 when I chose the Flipped Classroom[3] as a lesson to teach to a group of teachers and administrators at CIS. Rather than sitting in a group and holding a lecture or discussion on flipped teaching methods, I opted to create a flipped lesson video to introduce my "students" to the topic, followed by an in class session in the flipped style where the students complete the assignment (in this case designing and building their own flipped video) during class time. The combination of creating a lesson that was both situated and embodied as well as actively constructing my own new learning about flipped teaching demonstrated to me the importance and power of the entire teaching and learning experience in which I was enmeshed, an experience brought about by my involvement in the MAET.

Dr. Punya Mishra's CEP 818 - *Creativity in Teaching and Learning* taught me that creativity is a skill that can be taught and practiced much like any other skill. Based, in part, on the work of Robert and Michele Root-Bernstein[4], CEP 818 posited seven skills for practicing and increasing one's creativity including perception, pattern creation and recognition, abstraction, embodiment, modeling, play and synthesis. While many of the ideas surveyed in my master's coursework appeared repeatedly as I progressed through the program, perhaps none did more so than the concepts I explored in *Creativity in Teaching and Learning*. For example, the practice of embodied thinking, including an awareness of how the body reacts to external stimuli, the same sense of

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[3] For more information on Flipped Classroom teaching, see https://flippedlearning.org.

[4] Sparks of Genius: The Thirteen Thinking Tools of the World's Most Creative People by Robert S. Root-Bernstein and Michele M. Root-Bernstein

muscle, movement, balance, and touch that can lead to increased creativity was also a key aspect of the situated and embodied learning described by James Gee. Likewise, the risk taking and allowance for mistakes that make play such an important skill for innovation and creativity were characteristics identified by P21 as critical for success in the rapidly changing world we find all around us. Similarly, play took on a prominent role in Maker culture as did the hands-on skill of modeling. With CEP 818, I began to recognize connections and repeating themes in my educational exploration. It not only taught me practical skills for increasing my own creativity, but it brought to light the intersection of ideas that swirled around me like bubbles rising up from the depths. From that intersection of ideas came a synthesis, an act of creation itself, where my accumulated knowledge, experience and ideas were combined in the development of something unique.

In fact, this synthesis manifested itself throughout the final three courses of my MAET program. My major project for CEP 822 - *Approaches to Educational Research* was literally "A Synthesis of Research Studies on the Effects of Digital Video in the Classroom" in which I identified and collected research support for the hands-on, creative, constructive nature of digital video production within the classroom as a platform for embodied, engaging learning that builds life-long learners. Likewise, the practical approach to the study and creation of online coursework of CEP 820 - *Teaching Students Online* meant synthesizing aspects of an ultra-micro MOOC (Massively Open Online Course) I created in CEP 812 into an online course module teaching some of the creativity skills I explored in CEP 818 using situated and embodied experiences, all while making design and pedagogical decisions as seen through the lens of TPACK. The culminating experience of the MAET, CEP 807 - *Proseminar in Educational Technology*, was a final exercise in synthesis involving the creation of an online portfolio bringing together the goals, ideas, and coursework from my entire master's program journey.

This ultimate emphasis on synthesis as a complex skill worthy of development, not just for the sake of increased creativity but perhaps as the pinnacle of educational practices, may also be the most important take away overall from my MAET experience. For, in putting it all together through synthesis, I can transform the varied and separate elements of a lifetime of experiences and ideas, of teaching and learning, into a new whole that is at once grounded in the past, cognizant of the present, while also creating the future by its very existence.

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March, 2018