

The Practical Use of a Hammer and Chisel

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Introduction

The end of my first year of teaching saw me working from home teaching six classes, taking the last class of my MATC, working through three professional development certification courses, while homeschooling my two young children. You would think that this was an unprecedented situation, a new challenge. Fourteen years earlier, I was taking a full undergraduate course load, working two jobs waiting tables, and foster parenting my toddler niece and nephew. Seven years later, I would give birth to my first biological child in the third year of my PhD program and discover that my job did not have the same priority as my then-husband's. That it was my responsibility to be the main full-time parent while also trying to do graduate research and teaching classes to earn my stipend. There were days where I would not stop working and by bedtime would have failed to complete a single task and realized I would have to change my entire approach to work and learning in order to continue to achieve in my situation. Two years later, we would have our second child and our family priorities would shift again, taking us 500 miles west, where I would eventually enter another graduate program and become that single mom, teacher, and student juggling the pandemic pandemonium. I spent the majority of my 20s and early 30s learning the time management, initiative, and coping skills that I had never needed to develop and had never been challenged to practice. Hammering and chiseling, into the uncooperative stone of my self-identity, the habits and skills that would carry me when motivation would inexorably fail.

I entered a fast-track certification and MATC program through a fellowship with a commitment to spend a number of years working in high-needs schools, whose focus was urban teaching. That first summer, we would learn some of the ideals of how to teach science and

engage students in the science and engineering practices and the barriers that students face to do so. These discussions were the first sparks that ignited the core of who I've become as a teacher and the goals I have as a teacher to educate the "whole student" in my classroom and develop my teaching philosophy in TE860 and TE891 (Artifact 6). During that same summer in TE822 and TE825, we explored the way that different situations can affect a student's ability to engage and learn within the classroom space, including previous school experiences, family situations, stress levels, and perception of self-efficacy. I saw a lot of myself in my students during these discussions and these classes helped me shift my perception of what it means to be a teen in schools labeled as high-needs.

I began my internship with four years of college teaching experience and a year of substitute teaching in the same district I was interning in. I was familiar with some of the challenges students in my district had faced and entered the classroom with the idea that these challenges were things that made them "not quite ready" to "do" school. That they had been born naturally curious and perceptive and somehow needed that curiosity "sparked" again and that it was my job to do so. The benefit of a year-long internship is that you have the opportunity to really get to know students. To know their backgrounds, what they do when they get home from school, their family dynamics, how they see themselves and others, and what they enjoy spending their time doing. In that year, I did not meet students who needed a spark ignited. I met human beings who were already so ignited that they got up and came to school every day despite situations that would make many other people plop down and not know how to get back up. I met humans whose hearts were so burning, that after multiple weeks of instability, they would come back in the hope that there was a way they could still move forward and make

progress. And that once they got past the stress of wondering if there was still a space for them in the classroom, they already had an abundance of that natural human curiosity.

It was no longer my job to ignite sparks. It was my job to equip students with the skills they needed to feed kindling to the spark they already had. I began to make connections between my high school students and the college undergrads I'd taught, and the frustration I had felt teaching undergrad courses to fantastically driven students that didn't seem to know how to read for understanding, analyze data effectively, or design/evaluate experimental setup/results. I wanted to be the intervention-- to assure that students who passed through my class left it more enriched in important life skills and coping mechanisms. That not a single student of mine would make it to their twenties without a toolbox full of science skills and coping mechanisms and that not a single one of them would have made it through class without being forced to practice them. I used new teaching frameworks I had learned during my summer crash courses (TE 860, TE 891) to form instruction that was highly focused on these skills (NGSS Science and Engineering Practices) and the process by which students interacted with the content, rather than the content itself.

It was during this transformation that we were challenged to identify a problem within our classroom (TE803) and brainstorm ways to address it. At the time, the students I worried most about were the students I did not see (or saw rarely). If a student shows up, I can work towards building a relationship to leverage into productive engagement, even if that means engagement in the planning of their future and not necessarily chemistry. But student absence and truancy were (and still are) a frequent challenge and even infrequent absences can have a large impact on student success due to students falling behind in their classes. I hypothesized

that if given the resources, these students would take advantage of learning experiences outside of classrooms and make efforts to keep up despite their absences.

Action Research: Sculpting the Invisible Students

This led to my first formal action research project (TE803, Artifact 1), in which I provided alternative ways for high-absence/truant students to engage in classroom-adjacent activities on demand, through use of their technological devices, and used assignment completion rates to determine whether students who had demonstrated a pattern of non-participation would use the opportunity to interact with class materials and complete assignments outside of the classroom. Through this, I demonstrated that multiple avenues for assignment completion accommodated students with diverse challenges and that these students would develop ways to cope with their situations when provided that extra support.

Through this project, I began to think more deeply about which supports students in difficult situations would benefit from the most. When my first year of teaching rolled around, it was in the same school on a new schedule and with new school direction. We were on block schedule and the administration's five-year plan required teachers to implement multiple Project-Based Learning units. On its face, it's an exciting direction for a school to take, and the research indicates it will result in higher engagement and lower student failure. Yet as the year progressed, I noticed that block schedule + large cumulative projects were actually impacting my absent students even more negatively. This cemented my larger purpose as an educator to serve my whole student population *and* my whole student.

My second formal action research project (TE861, Artifact 5) began in earnest, long before the class began. Over time, putting myself in the shoes of a student that had missed

multiple major project work dates, my research evolved into building an entirely new set of norms for those students who had difficulties coming to or remaining in class, which relied heavily on students self-tracking progress and determining which learning paths were right for them by assessing themselves on unit roadmaps. This required that the *process* was even more heavily scaffolded than the content. These students had to explicitly identify for themselves the challenges they were facing and then identify the strategies they were going to use to get the work done *anyway*. It required one-on-one discussions about the effectiveness in which students were using critical self-reflection and forced students to challenge their own identities in discussions about what learned helplessness looks like and what making yourself mindfully uncomfortable means for personal growth. And it required frank discussions about my goals and the goals of their other teachers-- that I was not there to motivate them. That I was there to teach them how to build success and make relentless forward movement without relying on motivation. Acknowledging and *knowing* that motivation waxes and wanes and will one day fail during an important task and being very purposeful about chipping away and carving their daily habits into a vehicle to carry them on the momentum of that relentless forward motion.

The Bigger Picture: Mt. Rushmore vs George Washington

My focus through my first semester of professional teaching had inadvertently been a sort of triage system, and much like a triage system, relies on those who are not bleeding and dying to take care of themselves and each other. But the students I remembered as an undergraduate lab instructor had (for the most part) not been those kids. *I* had never been that kid. There was ample evidence that those students in Level V of my triage system would still go to university and enter their adult years without the skill and strategies that I have identified as important for

long-term success, and therefore evidence that I was failing to serve an entire subset of the student population.

A Sculpting Template

Eastern High School is an International Baccalaureate magnet school and functions with the goal to embrace the IB philosophy. During my experience as a first year teacher, I was steeped in various IB trainings and meetings and seminars, designed to help all teachers at the school implement the IB philosophy, standards, and approaches to learning more effectively. We were provided time outside of our classroom to collaborate with our departmental colleagues and IB coordinators to build IB-compliant lesson plans (Artifact 2). I leaned into this as a way to support the instructional goals I had developed throughout my MATC course progression and embraced building the IB philosophy that explicitly dedicates classroom time and organizes assignments/assessments towards the same personal development and success-strategy-building that I had demanded of my most struggling students. This led to the development of Unit Plans built on a foundation of mindful personal growth-- a science education devoted to building the habits that students will fall into as they move outside of their comfort zone and into their zone of proximal development.

The natural question that arises during this is whether or not stepping into a classroom whose culture is about using science skills to build a robust personal growth system and solid coping strategies will be so much of an educational shift that students will struggle to reasonably adapt. So in addition to organizing my classroom culture around this, I used the collaboration time to work with departmental groups to discuss the viability and importance of building these

practices into science classes at every grade level and to do it in a way that would provide consistent expectations and supports. I wanted to build it into the department vertical alignment. As a department, we spent time discussing and bringing in examples of student work to demonstrate how we were addressing key science skills and building on these skills as students progress in their science education. The addition of IB Learner Profile and ATL skills to the department vertical alignment (Artifact 3) did not take off this year, but my immediate future goal is to bring the discussion to the table with more evidence and examples of lesson adaptation to encourage its incorporation.

Carving Out a Purpose

In order to better equip myself to handle the demands and challenges of teaching with an IB whole-person, global citizen philosophy in mind, I enrolled in specific IB professional development training (Artifact 4) at the end of my first year of teaching. The goal of this training was multi-fold. First, it would allow me admission to a larger professional community of like-minded teachers for whom educating students explicitly on these success-building skills and with personal growth in mind was a major priority and classroom norm. Second, it would provide further reasoning, evidence, and language to use to convince the rest of the teachers in my department that a heavier hand with instruction regarding IB ATLs is a worthwhile investment of our IB collaboration time. Third, it would provide examples (and exemplars) for how other teachers are implementing these measures in diverse classrooms.

This professional development decision has forced me to make time and space to visit my instruction for the 20/21 school year (and beyond) and to develop a clearer and more focused vision for how to effectively overlap both the Science and Engineering Practices and the IB

Approaches to Learning and Learner Profile development. My goal is to enter my second year of professional teaching mindfully implementing explicit instruction on success skills and self-guided initiative, with a whole-class approach to whole-student learning, development, and personal growth. In light of the possibility of a resurgence in COVID-19 cases when schools resume, in which we will again be in a remote-teaching situation, I will spend personal, self-organized professional development time each summer reflecting on how I will improve my norm- and relationship-building strategies in ways that will explicitly have students identify their personal-best strategies for the beginning (initiative), middle (productivity), and end (endurance) of tasks they perceive as difficult. This will improve students' classroom AND remote-learning experiences. I believe that through this, I will develop a classroom and an instructional model that leads to genuine life-long learning and growth for every student, which will improve the uptake of those widely-applicable science and engineering practices, as well as the standards-based classroom content.