UnBoxed

A Journal of Adult Learning in Schools

Graduate School of EDUCATION

*un*Boxed

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The Who Walks Here? Project. Photo courtesy of Brooke Newman

cover image: "*Staircases to Nowhere*" Photo courtesy of *Jeff Robin*

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Welcome

The Editors

Welcome to another issue of UnBoxed! We hope you will enjoy this collection of essays, reflections and reports about passion, purpose and practice in education.

Four of our contributors reflect on the impact of student-teacher relationships and the importance of honoring student voice and building trust in order to create that safe space needed for students to take risks and grow. Using both traditional and nontraditional forms of writing instruction, Sheldon Krieger explores the balance between honoring a student's "home" language and identity and providing him with the written and verbal skills he needs to succeed in the professional, or "downtown," world. John Paull reflects back to the moment where a student taught him what it meant to teach—and how one student's engagement in something as small as a spider turned a class around and created a room full of scientists and researchers. Michelle Clark provides an honest account of her struggles to "manage the tension between freedom of thought and focused and intentional dialogue" around issues of race and privilege, especially in her situation as an African American teacher in a room full of white students. Patrick Yurick shares a heartbreaking reflection on the death of his student and

the pedagogical lessons that emerged from that experience, realizing that every moment he has with his students is important and must be "worthy of our students' time."

Other contributors ask us to rethink some of our ideas around some current instructional trends. Randy Scherer challenges the idea of a dedicated maker space, arguing that "making" should happen in every classroom. He offers his version of what it means to be a maker in a humanities classroom and the impact this has on his students. Wesley Davidson echoes Randy's thoughts when he looks beyond the value of exhibition to the importance of every student having a sustained purpose throughout the days and months leading up to exhibition. Both of these educators see the value both academically and emotionally in creating an environment where every student feels a sense of purpose and importance beyond a grade.

Finally we have several contributors who offer their perspectives about how to make the classroom a more impactful space. Jal Mehta recounts a lively debate with a colleague about the value of depth in instruction versus breadth, and Robert Sternberg offers some advice for those educators hoping to make their classrooms a more creative space.

The UnBoxed cards in this issue offer glimpses of projects and practices that we find inspiring. These cards are freely available on our UnBoxed website in a printer-ready format. Simply print, fold, share and discuss. Each card refers the reader to a web address for further information.

We wish to thank the K-12, university and other educators who have reviewed our submissions for this issue and offered invaluable counsel. We invite all of our readers to join us in conversations about teaching, learning, design and leadership by submitting your thoughts for publication or serving as a peer reviewer. To learn more, visit www.hightechhigh.org/unboxed

Our next submissions deadline is Monday, March 7, 2016

Read, enjoy, and participate!

—The Editors

Photo courtesy of John Paull

Thank You, Tiger! My Teacher Wake-up Call

John Paull
Denver Public Schools

Long ago, in September, 1963, in fact, I started my first teaching job. I didn't have a formal interview for the position. Heading home on the train for the Easter break in my last year at college, I happened to share a compartment with Mr. Elvet Thomas, one of my teachers when I was in grammar school, and, now, the newly appointed headmaster of Trinity Fields Secondary School in Stafford.

He said he was looking for a science teacher—did I want the job? Mmm, yes, yes, please, Mr. Thomas! Thank you, thank you, thank you, Sir!!

Thus, without further ado, I was appointed as a science teacher at Trinity Fields. The school, like all secondary modern schools of the time, was for students aged between 11 and 15, all of whom had failed the national 11+ examination 1, and thus seen to be undeserving of an academic education.

The day before school started for the new academic year, I was given my teaching responsibilities. I was Form Teacher for 1C, which

meant, I was told, that I took the morning register for attendance, checked who wanted school lunch, and met with the class again before dismissal at the end of the day.

After taking my class to morning school assembly, I was to teach the bottom classes in each of the four years (1C, 2C, 3C and 4C). The Head of the Science Department gave me the textbook, pointing out the science topics I was to cover. "Not to worry," he said. "When they take the Leaving Test at 15, only mathematics, reading and writing are tested. It's a pity but science isn't considered that important. Nevertheless, make it good, John Paull, make it interesting."

The following day I began my teaching career. Well, teaching is perhaps too grand a word. It would be more honest to say that I began to be paid for standing daily in front of loads of bored adolescents, opening a well-thumbed science text book—then, scribbling key science words on the blackboard to be copied into their science notebooks. I didn't know how to make science interesting.

My science-teaching pattern was straightforward. The kids came in, I welcomed them, they took their seats, opened their science journals, and waited as I read from the science textbook. I then wrote the key science information on the board and the pupils, using their best handwriting, copied my notes. Nothing to it, really.

What follows. then, is is the description of one significant thing that happened during my first and very challenging year, especially with Class 3C:

Thirteen year-old Tiger always sat alone at the back of the science lab. As he was always looking for trouble (and he was really good at finding it), he was, to put it mildly, a pain in the ***. Tiger made my Class 3C science lessons a joke. School didn't interest him and my science didn't engage him. His dad had told him that he'd have a job with him as a bricklayer on the building sites when he was 15, so, hey, why should he 'do his best' in school? What was the point of it all?

My monthly science topics certainly didn't interest Tiger. Well, to be honest, they didn't interest me very much, either. When I read from the science textbook about Gases, or, Density, Tiger would roll his eyes,

run his fingers through his greasy hair, scratch his head, and interfere with anyone sitting close to him. His science notebook was filled with dirty pictures and rude scribbles. Occasionally, on his really bad days, especially when it was raining outside, Tiger would shout that he was fed up with school and very fed up with boring science.

'Science is borin'…..flippin' borin'

Nothing I did in my science lessons (which, to be honest, wasn't much) made any connection to Tiger's life experience or appealed to his sense of curiosity. The science I read from the textbook was irrelevant to his world—especially, I suppose, the way I presented it. To be honest, the science didn't interest anyone in the class, including me.

Most of the boys and girls did, though, sit politely through each lesson. They spent their time scribbling and drawing in their science writing books, often whispering to each other, probably gossiping about Tiger. The boys, though, waited for Tiger to stir the pot.

The days, weeks and months dragged by.

In the first week of Spring thank goodness, the miracle of miracles happened—a big, BIG change for the better came over my teaching. Tiger, of all people, and a small garden spider, were my divine inspirations.

Walking back from shopping for the weekend food, I spotted the most beautiful orb-web spider sitting in her intricate silky web in the black currant bush outside the steps leading to my flat. Surprised to see one so early in the year, I fetched a jar, popped her inside, and took her upstairs.

The spider reminded me of when I was a kid and my dad and I found some garden spiders in a cluster of webs at the back of our house. I kept two or three of them in a jam jar tucked under the bed—quickly learning that you

don't keep spiders together because they eat each other. Looking after the survivor was really fascinating, though. Keeping her safe and well fed with flies and moths had made me feel good, especially when she deposited an egg sac for me on her silky web. Later, I released the babes and the mother back to the garden which, really, was their best home—much better than a jam jar.

I took the newly caught spider to school the following Monday, put her in a large bell jar with a little soil, some greenery, a branch, and a couple of small silverfish insects. I set the spider home on a small table at the back of the science laboratory, out of direct sunshine.

The following day, I was thrilled when I saw a silk egg sac dangling from near the center of the spider's orb web. Smiling, and thinking back to when I was a kid, I knew it was going to be a dead good day. Sensing the spider was hungry, I found another small silverfish darting around the base of my desk, unscrewed the top of the spider home, and, with apologies to the poor little thing, put the small creature on the web. Immediately, the spider came running towards her prey. I sat and watched, fascinated by the process, until Tiger's class came through the door, breaking the atmosphere by noisily throwing their satchels under their stools.

Here we go, I thought. Sorry, spider, I gotta go. I got up quickly, pushing the spider home to one side. The kids were ready for yet another particularly dull science lesson (all chalk and talk, then reading and writing, and no 'hands-on' science investigation). They looked bored before I even started.

Then Tiger came through the door, late. He had a real mean look on his face. Crikey, I thought to myself, I think I'm in for a real treat today! When I asked him where he'd been, Tiger stared at the floor, kicked a piece of scrap paper, and mumbled he'd been sent to the Headmaster's office because, he said, "I was caught looking frew a dirty book, sir. 'fore school started. Not fair."

Smirking, I felt nosey—I wanted to know more about what had happened. "Who caught you?' I asked, thinking 'Tiger, serve you right!' Tiger's tone changed, and he looked across the room at me, and shouted loudly:

"Mr. Jelbert, you know, Mr. Paull, P.E. teacher, he looks at us lads in the yard through his 'scope from the class upstairs. He saw me. Looking at pictures. You know. Dirty pictures. Weren't my book, though, Mr. Paull. It's Fatty White's. 'E shows me every day. It's them pictures I try to draw in me science book. Now Mr. Thomas has it. Fatty'll murder me. I've got to go back to the boss's office after school. And I'll get whacked. I'll get six, I know I will."

Looking sulky and angry, Tiger turned and went to his usual spot at the back of the classroom, close to where I'd put the spider.

The class was more restless than usual. And now, I thought, I have to teach, well, read about the science of carbon dioxide.

Thank you, Tiger.

As I was writing on the blackboard, asking the pupils to open up their journals and copy my notes, there was a loud shout of "CHRIST! Friggin' 'ell!" from the back of the room. Startled, I looked across the lab. Everyone in class turned their heads to see what was going on. What did we see? Tiger, of course! There was Tiger, standing up and pointing his index finger and thumb at the bell jar. The sulky look had gone. His eyes were wide open.

'F*# 'ell! Look! Mr. Paull, Mr. Paull, there's a spider 'ere! It's killing a creepy-crawly! It's f*^** killing it! Look!!!" I raised my hand. "Tiger, that's enough! Watch your language!"

"Mr. Paull, Mr. Paull, I can't f*ing believe it. Look at THAT! The spider, f*+** great!!"

Tight-lipped, I told him to sit down, leave the spider alone, and get out his science journal. NOW!!

Tiger totally ignored me. The spider eating her lunch, of course, was, for Tiger, far more interesting than my science -reading lesson. I turned to the class, and tried to settle everyone down. "C'mon. Everybody! Never mind Tiger. He's just having a moment. Get on with your writing. C'mon everybody, it's no big deal."

Yeah, right! Of course it was a big deal! Tiger swearing loudly was much more captivating than my science-reading and writing lesson for the class. "Wassup wiv Tiger, Mr. Paull?" asked Michael, suppressing a giggle. Turning to the rest of the class, he said, '"'e sick or summat?" Everyone laughed. That did it—everyone now was restless. I had no choice but to give in. "Go on, then, everyone, take a look. Two at a time. Go and see what Tiger's getting excited about—go and see what's in the jar—then get back to your seats."

They didn't need telling twice. Everyone rushed to join Tiger at the back of the room He pointed to the jar which got everyone chattering excitedly about the spider—excited chatter was something I had never heard in one of my science lessons. "Ain't never seen a spider like that! What is it? Wos it doin'?" asked one pupil.

One of the girls, Diane, said the spider was so beautiful. "Can I look at it, sir? Please? Can I get a maggy glass from the drawer?" she asked. I thought for a moment. Why not? Sounds like a good idea. T'is science time, after all. I nodded. Diane fetched a magnifying glass and peered through it. "It's great." She looked up at me. "Can I draw it, sir? Please? In me science book?"

"Of course." I said. "Use your pencil, not your pen. Oh, don't, though, draw it in your science book. That's for science. Here, there's a piece of scrap-paper on my desk you can use!" Dianne looked at me, and asked, drily, "Aren't spiders science, Mr. Paull?" "'Course, Dianne" I replied. "Sorry. Do it, drawing, oh, go on, put it in your science journal." Then the teacher bit in me added, "Don't forget to put the date at the top….."

The idea caught on and a few more of the class said they wanted to draw the spider, sitting in her web, clasping the poor silverfish. Defeated, I told everyone to close the science textbooks. "Draw the spider, go on, everyone! In your journals." Tiger did not draw the spider in his journal, though. He sat very still, ignoring me and everyone else, eyes staring at the jar, watching the spider, mesmerized.

The science hour went by quickly, every minute focused on looking at the spider and swapping stories about spiders they'd seen around the backs of their homes.

Tiger stayed behind after class for a few minutes, and, with a warm grin and an impish twinkle in his eye, asked me where I'd found the spider. When I told him, he said, "The spider's great, sir, ain't it great? You like 'em? Spiders? They're brill, ain't they?" He looked up at me.

"Sorry I swore, sir, sorry. Won't do it again. 'Onest!! Sorry I din't do anyfing in me science book. Can't draw, anyway, you know. Scabby drawer."

"Well," I said, using a quiet voice, "I think you can draw, Tiger, but the pictures you draw in your science book are rude, you know." Tiger smiled, shrugged his shoulders, and then said he was going to get some spiders of his own as soon as he got home. "Good, but now get off to your next class. Don't be late," I said. "Oh, and don't forget to see the Headmaster, Mr. Thomas...and be sure to give the book back to your friend."

That night, I couldn't put the spider episode out of my head. The kids really had a ball, drawing and talking about spiders.

The next day, Tiger was waiting for me, outside the staff room, before school started. He had that Tiger impish smile on his face again.

"Hey, Mr. P...Boss let me off. He believed me. Anyway, it really weren't my book. Didn't get whacked." He took a jam jar out of his satchel. "Look, Mr. P…Got some spidos. Found 'em, Mr. Paull, found 'em. There were stacks of 'em. Tiny 'uns. Babs, I think, ain't they? I got free or four. Like yours. Can I keep them in the lab, Mr. Paull? Go on! Can I? Next to yours?"

Then, he added: "Found out about 'em, too, Mr. Paull. My dad knows what they are—they're Garden Spiders, and they eat flies and stuff!" He looked up at me. "You know what? You're ok, Mr. Paull! Sorry, sorry, I swore. Won't bovver you agen, 'onest."

"Thank you, Tiger, thank you. I appreciate that." I said. "I'm sorry you swore, too. Come with me. Let's get some jars for those spiders."

Then, I added, "Hey, no more naked girls in your science book, ok?" "Promise, no more. I promise." said Tiger.

We went to the science lab and I gave him four small jars, telling him that spiders can't live together without paralyzing and eating each other. "Make a home for each one, ok? Quick, now, school's starting soon. Go to your form room. Oh, and you can tell your class what you know about spiders, ok? Then take them home and set them free, ok?"

When his class came later in the morning for science, Tiger stood sheepishly at the front of the room, by the blackboard, the four jars in front of him. Some of the boys nudged other, curious as to why Tiger was standing at the front.

Tiger held up a jar. He then told a very respectful, quiet, surprised, and very attentive audience what he had learned about spiders. I couldn't believe what I was seeing. I was fascinated to see how Tiger caught everyone's attention with his excited, twitchy, body movements. Tiger had at last discovered something in my science period that made him feel that wonderful, inside-your-head glow when the brain is alive and alert. His classmates felt it, too.

"Spiders, " he said, " are dead good. Look at this one. It's a beaut."

He held up one of the jars.

"Guess what I found out…Spiders suck their food after they've crushed and made watery…ain't only the gals that make silk…the fella spiders make silk, too, but only when they're young…then they stop and go looking for a spider girl-friend. They mate on the web… sometimes the gals kill and eat the fella…some spiders chase after stuff they want to eat."

I was taken aback by how much he knew, thinking: "Where did he learn that from, then? All from his dad? It weren't, for sure, from me in science lessons." He'd really done his homework. This was Tiger's golden moment.

Tiger told his audience that, if anyone wanted to watch, he was going to release the spiders and their eggs in the school garden at lunchtime. "They're goin' to die soon, oferwise, y'know, and the eggs will 'atch soon, right, Mr. Paull?"

When he'd finished, everyone clapped. "Any questions for Tiger?" I

asked. The hands went up, and Tiger was asked a million questions, some of which he could answer.

Almost everyone turned up at lunchtime to see Tiger release the spiders.

That night I checked my spider's identity in a spider book, learning that it was *Meta segmentata,* a common garden species related to the garden spider. Its courtship routine was different, though. The male, I read, drives off other male suitors, but doesn't advance towards the female until an insect is caught on the female's web. Both spiders then move towards the struggling insect. The male's front legs are larger than the female and he uses them to push the female away from the insect. He then gift-wraps the prey. As the female tucks into her dinner, the male wraps silk around her legs and then mates with her.

The following day, I went to school early in the morning, an hour or so before the official start of the day, and went to the science storeroom. I gathered a box full of bones and mounted spiders and insects, microscopes, racks of test tubes, flasks, and other scientific equipment. I set them out in the science lab and then rearranged the stools.

When Tiger's class came through the door, the boys and girls noticed what I had done and looked at my displays of science equipment. "Hey," said one, "look….look at all this science stuff……..and hey, look, we ain't sitting alone. He's put us in groups." He turned to me. "Mornin', sir, this stuff looks great. Can we touch it?"

Tiger showed me a picture he'd drawn at home of the beautiful orb-web spider. "Hey, you did it. You drew your spider. You can draw, see?" I said. Tiger smiled. "Can I glue it on the cover of my science journal, Mr. Paull?" "OK," I said, "but first let me rip out those inappropriate doodles, ok?"

I started off the lesson by pointing to the specimens I'd found in the cupboard and then sharing the spider snippet with everyone. I couldn't believe the effect it had—the kids were enthralled.
I was very struck with the ensuing class conversations and how the class listened when Tiger had something to say. When talking and

learning about spiders, the pupils were very animated, commenting and asking good questions.

"Tomorrow, " I said, at the end of the lesson (which flew by), "we'll do that again, ok? See if you have anything that links to our lesson topic, you know, insects and stuff. You don't have to stand at the front and share. You can share your stuff with me privately, if that's what you'd rather do. You can draw and write about them in your science journals." "Great," said Diane, "Like bein' a proper scientist. S'dead good!" "Oh," I said, "leave your journals. Let me have a look at them tonight. You'll get 'em back in the morning."

That night, I opened up their journals, the pages of the day filled with spider and insect pictures, facts and questions. Even Tiger's…

Hey, it dawned on me. Why was I such a twerp? I had learned, by sheer luck, what motivated and engaged my most challenging, disruptive pupil: observing and studying a small spider. It was, in fact, an incredible teachable moment. I had learned the importance of arousing curiosity, of engagement…I had seen HOW students learn best.

The next day, and for days after, kids brought in all sorts to show me, and each other…and, for the first time, I felt like a teacher.

It was THE first 'Come on, John Paull, be a REAL teacher. Be professional. Earn your pension.' wake-up call. Now I KNEW how to teach science!!

Well, at least I KNEW how to teach science in a way that I, and my kids, enjoyed.

A life-changing experience, for the better. From Tiger, of all people.

Thank you, Tiger. Bless your cotton socks. Thank you, spider!!

(Excerpt from: *Through My Eyes—on becoming a teacher.* John Paull 2012.) To read more of John Paull's work visit: *mywishingrock.blogspot.com*

Breadth and Depth: Can We Have It Both Ways?

Jal Mehta
Harvard Graduate School of Education

This past fall I shared a prospectus for a book I'm working on about "deeper learning" with my Ed School friend and colleague, higher education historian Julie Reuben. She read it, and said some nice things about the prospectus, but didn't seem fully convinced. When I pressed her, she said that the reason is that she isn't sold on depth as a goal. Young people should be exposed to the range of human pursuits—breadth was what we should be seeking; specialization and depth could come later.

That led us to give a talk about breadth and depth. I advocated for depth; she for breadth, and then we each tried to integrate the two.

Here is an abridged version, told from my perspective.

The Case for Depth

In Sarah Fine and my research on contemporary high schools, the aspiration of breadth was frequently a barrier to more significant and powerful educational experiences. In the name of breadth, curriculum

was often a "mile wide and an inch deep," and teachers repeatedly told us that the pressure to cover topics interfered with the ability to really investigate a text or explore a scientific principle. The consequence of this rushed pace was that students frequently did not have time to actually do the subjects; for example, reading about or quickly walking through an experiment to achieve a pre-specified results is the opposite of the uncertainty that is at the heart of real scientific inquiry. Society's desire that all high school students know X and Y and Z also frequently constrained students' ability to exercise choice and agency over their own education. The desire for breadth also led to a heavily fragmented schedule—45 minutes of one subject followed by 45 minutes of another—short blocks that didn't enable significant investigations of a topic, and meant that students' homework was also a little of that and a little of that. And the nail in the coffin was that organizing for breadth didn't seem to yield even what it was seeking; in the rush to take 9th graders from Mesopotamia to the French revolution, students did not end up either knowing broad swaths of history or how to do real historical inquiry.

Conversely, almost all of the best educational experiences we saw took the opposite stance and privileged breadth over depth. Problem-based learning in math, for example, would feature one single difficult problem rather than lots of problems that were an application of one rule. Schools that took this stance also frequently had longer blocks and fewer subjects (at a time), allowing for more sustained inquiry in a particular domain. In terms of classroom experiences, the best teachers we saw tried to create an atmosphere where immersion in the thing was the only thing, where time stopped as students explored a text or investigated a scientific question. Depth was also often associated with student choice and, in turn, intrinsic motivation. As students choose to spend sustained time in electives or extracurriculars on subjects they liked, these environments were thus infused with the kind of energy and momentum that was frequently absent from more required subjects. And when, judging by adult eyes, we saw significant comprehension of a subject, an ability to not only know but do the things in the domain, it was almost always when students had gone "deep" in a field. For all of these reasons, we were left thinking that high schools should potentially be reorganized to enable students to take fewer subjects and spend more time on the ones they cared the most about, with external pressures for content coverage significantly lessened.

The Case for Breadth

Julie is a historian of higher education. She argued that the history of efforts for breadth in higher education was mostly a failed one, but that it was worthwhile to do it anyway. She argued that students preferred depth over breadth for many of the reasons I described; namely that it enabled them to spend more time on the things they were most interested in. Faculty also preferred depth over breadth, because it enabled them to teach the specialties in which they were most interested in. The result, she argued, was implicit collusion between students and faculty in higher education to prefer depth over breadth; no one wanted to teach more general courses and few people wanted to take them. Establishing something like a core also meant huge fights over what should be in and out, which generally were unpleasant and were never resolved to everyone's satisfaction. Hence, with some signal exceptions, like the Core at Columbia or "great books" at St. Johns, depth and choice had usually won out over breadth and core requirements.

But, Julie argued, just because it is easy does not mean that it is right. Most students will not become professional academicians; the role of both high school and the non-major part of college is to prepare people to become informed and thoughtful citizens. To do this, they should not be taking hyper-specialized courses that faculty might like to teach, but rather they should be confronting broad questions that are important for modern humanity. As Jerome Bruner pointed out long ago, domains also have a certain underlying structure or logic to them, and broad courses can introduce students to key perspectives, ideas, concepts, and events that are important for understanding how those domains work. And while they may not remember everything they learn, they should at least have some acquaintance with the chronology of major historical events, understand something about the nature of evolution and the biological basis of life, and be exposed to many of the other core topics that are frequent staples of the high school and college curriculum. While there will surely be debates about what should and shouldn't be included, particularly around the canon and its modern critics, these are exactly the debates that those who are running an educational institution should be engaged in.

Having It Both Ways

There may be ways to have it both ways. On further reflection, it seems as if breadth and depth are much more intertwined then they initially appear; it is not possible to become a deep inquirer in a subject without some broader understanding that goes around the specific thing you are exploring; conversely, it is not worth much to do a historical survey if it comes at the expense of understanding how that history was constructed.

We thus far have identified two possibilities for having it both ways; we would love to hear from readers of other ideas for potential syntheses.

1) The T shaped design: One possibility, which is frequently used at both the high school and the college level, is to create a T shaped course design. The T represents people who are moderately knowledgeable across a domain, and deeply knowledgeable within a strand of that domain. So, for example, when I teach course in Education Policy, I tell students that they should be able to come out of it able to hold their own in a policy conversation on most of the major contemporary topics, as well as to become deeply knowledgeable about one. Concretely, that means that the majority of the course time moves through readings and topics chosen by the instructor to help students understand the range of topics and perspectives in the field, but that the student is also pursuing a longer term project on a topic of interest to them. Such a design also balances the light paternalism that education for breadth requires with the choice and student agency that are central to education for depth. In the best versions of this design, core concepts or themes are threaded through the topics; these concepts or themes both tie together the different weeks of substantive content and are applied and reinforced through the students' chosen projects.

2) Essential questions that force integration of breadth and depth: Imagine if you took that same 9th grade "Mesopotamia to the French revolution" course and organized it instead around the following essential question: "Why do civilizations rise and fall?" This kind of question forces some coverage, as students look across the Greeks, Romans, Mayans, and others, but it also puts students in the role of historical social scientists as they seek to develop theories, weigh

evidence, and consider context. Such an examination could also clearly connect to contemporary questions about whether America is a civilization in decline, a thesis recently proffered by some noted commentators. It might also help students to remember some of what they learned in the longer term, as specific historical events would no longer seem like a string of facts but rather part of a pattern or thesis that the student had developed.

Deeper learning is a good name for a movement, especially one targeted at improving secondary schools that historically have privileged breadth over depth. But if the goal is to think hard about the nature of good education, it only gets at one part of the equation; schools of the future need to think about ways to integrate breadth and depth if they are to produce an educated citizenry.

As first appeared in Education Week's Learning Deeply blog on July 14, 2015. Reprinted with permission from the author.

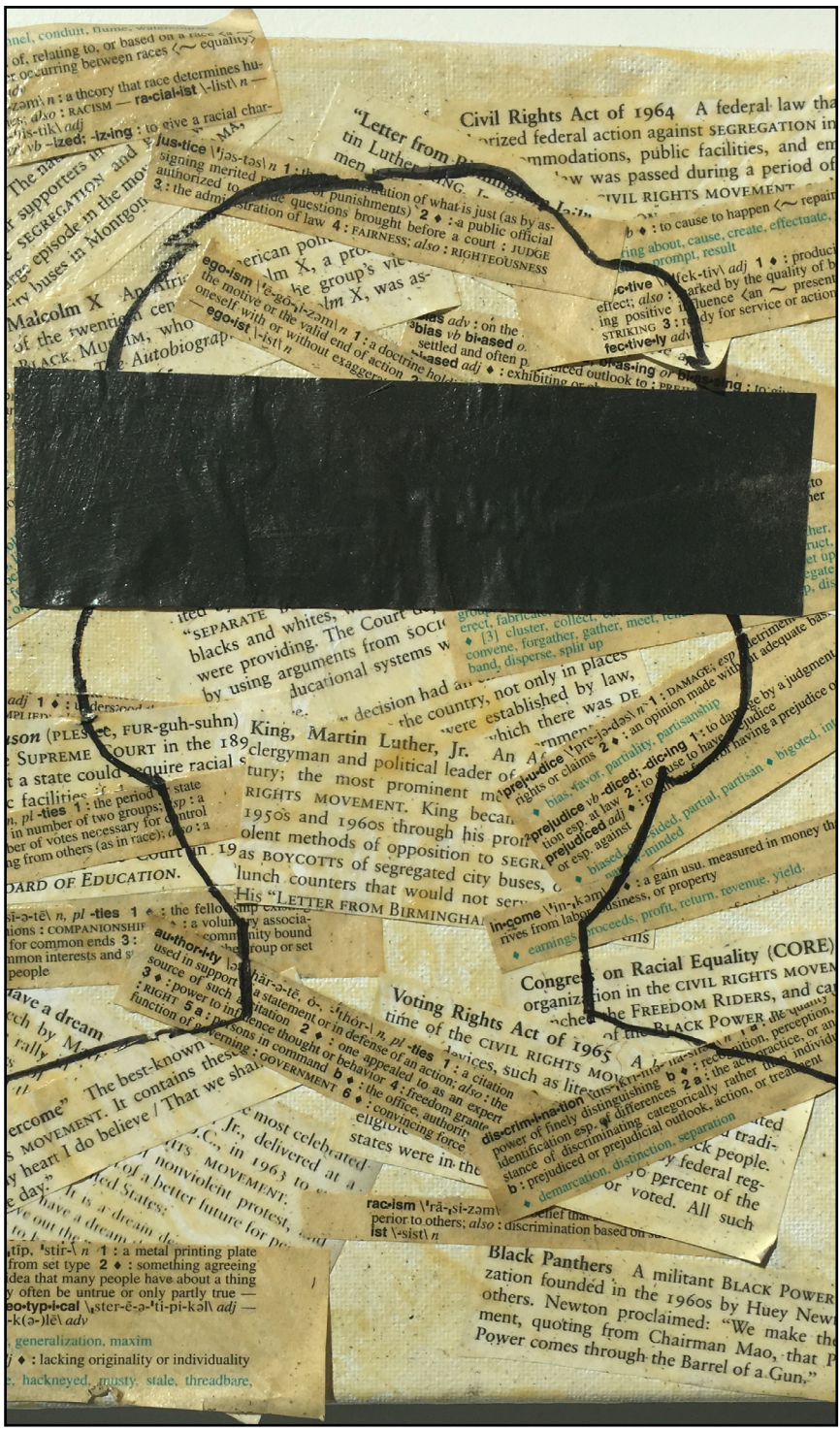


Photo courtesy of Michelle Sadrena Clark

Other People's Children Are My Children...At Least for Nine Months

Michelle Sadrena Clark
High Tech High North County

Lisa Delpit's thought-provoking book, *Other People's Children*, provided me with much needed insight regarding the complexities involved with teaching students of color, particularly for white teachers. I found myself nodding my head throughout various sections of the book, empathizing with those "poor white teachers" who needed help teaching "poor black kids." As I started to think about my own experience I wondered if this book had a counterpart, a guide for me, an African American female teacher with predominantly white male students. But I didn't go searching for the guide, because it was important for me to investigate my own insight into this sensitive area, before seeking out corroboration, corruption, or compassion of and for my sentiments.

To be clear, this is NOT a guide, and I do NOT have all the answers, or any answer for that matter. I simply want to share some of what occurred in my teaching life a couple of months ago, something that caused me to think about my own role in the lives of other people's children.

Delpit (2006) writes that "in order to resolve the monumental problems we face providing a quality education for poor children and children of color, we must open ourselves to learn from others with whom we may share little understanding" (p.131). But what happens when there aren't many "others" in the classroom, either due to lack of racial diversity or simply a dearth of divergent thinking. From where will students gain an authentic cultural understanding? Thus, I felt compelled to create an experience that forced students to investigate "others," in an effort to gain greater cultural and human understanding.

The Privilege and Power in America Project

In all honesty, my 2015 "Privilege and Power in America Project" was an emotionally enervating experience that stretched me as a teacher and a human being. Parts of me wanted to give up or at the very least, refrain from doing this project ever again! This winter was the third time I launched the project that asks students to examine invisible privilege and connect how systems of privilege translate into certain types of power. The project begins with students creating an individual list of privileges they possess or lack based on race, ethnicity, and gender, generating a class list, interviewing a diverse sample set of the public to collect their views on the subject, investigating current statistics in societal systems (i.e. education, criminal justice, employment etc.), then honing in on one issue to elucidate in an original TED Talk presentation for the public.

Of course I expected the usual confusion about the concept of invisible privilege, followed by a smidge of doubt and denial, then a slight lack of recognition, subsequent awareness, a tinge of outrage or apathy on the part of a few, and finally followed by a full realization of social injustice on the part of many. It would be just like the two previous years, and I would end the project with self-gratification, knowing that I had moved three 11th grade classes, and potentially our entire world, one step closer to social solidarity by enlightening these young, developing minds with consciousness of invisible privilege.

And the award for Social Justice Teacher of the Year goes to…Michelle Sadrena Cla-... But this wasn't that kind of year.

On day one I brought students into my office and filmed their response to the question, "What is invisible privilege?" Answers ranged from nervous laughter, to the tautological response "a privilege that is invisible." There were fewer than five students out of sixty-two who could provide an accurate response, and I was thrilled because this meant I was going to rock their world with new knowledge and discovery!

I assigned Peggy McIntosh's "Invisible Privilege: Unpacking the Invisible Knapsack" in preparation for a socratic seminar the following day where students would respond to the question, "How does/will white privilege impact you personally?" In previous years, to my dismay, the most repeated commiseration throughout each socratic discussion was something along the lines of "I never thought about how bandaids don't match all skin tones. That is so wrong." I would bite my tongue, because I wanted to shout, "How is that is the major injustice issue you gleaned from the article?!" However this year was different. This year most students looked deeper into the content and made meaningful connections through inquiries like whether or not upbringing played more of a role than race when it came to privilege and how people born into privileged systems should respond once they have been made aware. I thought, "This group is taking a serious look at the issue of invisible privilege!" So you can imagine my surprise when this year affected me more emotionally than any previous year.

Can You Advocate for Social Justice Objectively?

Howard Zinn once stated, "You can't be neutral on a moving train." (also the title of one of his books) and as I struggled with my own hypersensitivity to make sure that I did not intentionally or unintentionally indoctrinate students with my own convictions, I realized the difficulty in maintaining neutrality when it comes to systems of privilege. I had a difficult time balancing my professional role as a teacher and my personal identity as an African-American woman. Though the majority of students were open to engaging in this unexplored reality, there were a few who vehemently and vocally resisted from the onset of the project. They expressed dissenting opinions on the purpose of exploring this subject matter in the first place. Generally, I view student voice as a triumph,, because it means I have successfully empowered them to speak their truth. Yet when

those truths contradicted my understanding of basic social justice philosophy, I was not prepared to immediately respond to "our children" in a thoughtful way.

This time it was a challenge to remain neutral when I was confronted with statements like this: "I just don't like learning about race type things because it's kind of like a game of who has it worse. And I don't see the need to see who has the most negatives at birth." or "The acknowledgment of white privilege creates problems that don't actually exist." Instead I wanted to respond in rapid succession with: "Are you suggesting that the most effective way to resolve inequality in the world is to ignore it?" and "Do you really mean to say that the problems created by invisible privilege don't exist for you, so why talk about them?" But at this point in the project I was still relying on student facilitation of the discussion—so I said nothing.

Typically my approach is to allow students to organically challenge each other's perspectives and come to their own conclusions or revelations throughout the course of the discussion. The only instances when I may intervene are when inaccurate information is repeatedly exchanged or when students forget to be "hard on the content, but soft on the people." With this particular project, I needed to manage the tension between freedom of thought and focused and intentional dialogue. I recall speaking to a few students privately to encourage them to bring their voice into the space, even if it appeared to be the minority opinion, and even if it opposed some of the dominant personalities.

However, there were definitely occasions when what was said necessitated teacher intervention, such as when a student said:

> *White privilege affects whites in a negative way because of things like affirmative action, and things implemented like that because it's actually inverting it so now we have opposite privileges, so it's no longer white, it's minority privileges...they are given chances, but it has a negative effect on certain policies….Affirmative action is saying that whites are better than minorities so we have to give minorities extra privileges….It's reverse discrimination.*

I did not want the rest of the class to leave believing this student's statements were fact without challenging these ideas. Thus I designed

a lesson on the history of affirmative action, how it started, how it has been revised over time, how it differs from state to state, who it impacts, and how it impacts them. I have learned that often times students regurgitate assertions they have heard from their parents or each other without ever investigating the truth of their claims.

I continued to listen to their perspectives, silently applauding when they challenged one another, and restrained my impulse to intervene, recalling Delpit's (2006) assertion that, "If teachers are to teach effectively, recognition of the importance of student perception of teacher intent is critical" (p.168). My intent was for them to learn through this project, not through me. Thus, it was crucial that I remained cool, calm, and collected in the presence of these comments and so many more—comments that in some instances were emotionally upsetting to hear. But I knew that if I allowed my true feelings to show or if I reacted defensively, it would have hindered the learning process entirely. Students might have focused on my personal and emotional reaction, rather than deeply exploring the issue in its entirety on its own. Fearful of clouding the issue, I chose to remain resolute in the belief that the only way to combat ignorance is to respond with information, and trust that my intentionally designed project would ultimately challenge them to come face to face with real world injustices and dilemmas that demand answers.

The Political is Personal

That doesn't mean that I didn't want to go in my office and scream, or go home and cry, or stand in front of all of them and deliver a diatribe of countless instances of modern day injustice in America. Truthfully, every day for the first few weeks, I contemplated ending the project because I wasn't sure I could evade my emotions, mind my mouth, or fake my facial expressions any longer. It was exhausting!

Below are e-mail excerpts between myself and one of my male students that demonstrates some of the ideas I encountered:

> *I find the subject of current racial problems in America boring and frankly unimportant, the "problems" that different races have to face today in America are generally very small issues that aren't very pressing. I would rather learn about how real racial problems still exist around the world, like places where slavery is*

still occurring and certain racial groups are being persecuted… we could be learning about something a little more important, most of these problems we are looking into don't really matter at all. Sorry if this comes off as angry or passive aggressive, I'm just stating my opinion, thanks for asking.

I think this is when it became impossible for me to remain internally neutral, though I did my best to maintain outward control of my emotions. I thought the most appropriate way to respond was with honesty and optimism.

Thank you for your honesty….as a US history teacher I do think it is important for students to be aware of, and ideally care about their fellow citizens living in the same country. Critical thinking involves looking at an issue from perspectives other than your own. There are still four weeks to go in the project so I encourage you to have an open mind, who knows? You may learn something! :)
See you Monday!
Best,
Mrs. Clark

In retrospect I realize that my e-mail was slightly passive aggressive which is why the exchange continued. The student wrote back, saying,

...I never said that I didn't find social justice and equality important. I was trying to say that those problems don't exist in America, to be truly honest I don't believe that equality is an issue in America. There is no need for social justice in America because there is no social injustice occurring in here…

At this point, I realized that not very much was going to be accomplished in this electronic tete-a-tete, so I endeavored to come to a resolution:

...perhaps during this project you might discover evidence that confirms or contradicts your current view. What is most important is that minds stay open and communication stays respectful regardless of differing views. Have a fabulous weekend!
Best,
Mrs. Clark

And another white male student who truly meant well commented,

> *I live in a mostly white neighborhood...we are somewhat diverse, every third or fourth house is a minority group. And you can see the kids don't act like what you would expect that minority group to act like. They act like they're white, they act like they're privileged, they act like any one of us would. The hispanic you see across the street doesn't act like he is from Chula Vista he doesn't act like he is from some neighborhood [where] he's grown up around all Mexicans his whole life.*

He was essentially saying that there are "good minorities" in the world, those who walk, talk, and act like "any of us [white people]." He failed to realize that his comment may have offended anyone in the room who was not white (myself included), or who did not meet his specific standards of assimilation. This student's comment is evidence of a widely held belief that as long as behavior and speech are modified to match that of the dominant group, tolerance and perhaps acceptance are possible. Regardless of his insensitivity and ignorance, he is not to blame, nor are other students who share similar beliefs. How can we blame students who have never had a parent or educator enlighten their worldview through conversation and exploration? Students who struggle to speak about race, ethnicity, privilege and power do so because the adults in their lives struggle to do the same.

Thus, after weeks of articles, documentaries, Implicit Association Tests, field interviews, class discussions, writing assignments, student exhibitions of their Privilege and Power TED Talks and visual art pieces, as well as written project reflections, I still cannot conclusively measure the extent to which each student was impacted by this project. In their inquiry based TED Talks, they explored their own privilege and power-centered essential questions and educated the public on a wide array of topics including the objectification of women in music lyrics, the treatment of Muslims, and the disparity of educational resources across communities. Just about every single one of their reflections indicated that they have evolved and progressed into socially conscious, equity based activists. While the skeptic in me doubts their sincerity, the optimist in me believes that growth is a journey, so I should celebrate the every step. This experience was difficult, but I am a firm believer in Fred Devito's quote, "If it doesn't

challenge you, it doesn't change you." How can I expect my students to embrace challenge, if I give it the cold shoulder, or more precisely, run in the opposite direction? No matter the cost, this work must be done, even if students may not realize its worth until years from now.

Thankfully, I didn't have to wait years because about a week after the project ended, one of my students sent me the following email:

> *Dear Mrs. Clark, I have tried several drafts of this email, and been unsatisfied by each one. I have attempted to find the right words to express my feelings towards this class, the projects we have done, especially the most recent, and exactly how much I value you as a teacher and a human being…As for the recent project on privilege and power, I have learned so much. I was that person who believed that racism no longer existed in America, and I was resistant to changing my opinion. However, throughout this project, I obviously changed my opinion and believe that I am a better person purely because I now try to empathize with others. Anyone who says this project was not life changing was too resistant to new information in order take advantage of the opportunities you gave us. This project has changed the way I view others and especially the way I view myself. I realize how I am biased and how the stereotypes I hold onto can hurt others. Now that I realize my flaws, I can take steps towards addressing them.*
>
> *I am constantly finding myself using what I have learned in real life scenarios. I use words or phrases that I never would have before in order to express my opinions and beliefs in a clear and concise way that does not offend the people I am speaking to… I have discussed this topic with my family and we have had long conversations on the different topics. Also, anyone traveling with me to games or practices has been fair game for discussions on race, gender, and privileges in America. I believe this topic is important enough to discuss with people I care about, and even those that I do not really know…Thank you for pushing me to be better and especially for helping me to get there.*

And with that email, I am reminded that other people's children are my children, at least for nine months, and I have a responsibility to raise

them well, teach them how to think rather than what to think, unless their thinking is significantly unjust. In which case, I will let neutrality take a backseat, while I conduct the train of truth and justice.

The end...or perhaps the beginning.

References

Delpit, L. (2006) *Other People's Children: Cultural Conflict in the Classroom*. New York: New York. Print.

McIntosh, P. (1988) "White Privilege and Male Privilege: A Personal Account of Coming to See Correspondences Through Work in Women's Studies." Wellesley: Center for Research on Women. Print.


EVERLAST

When Exhibition Might Not Be Enough

Wesley Davidson
Chicago Tech Academy High School

On the day of our second school-wide exhibition last year, a student's words nearly broke my heart. I heard them secondhand and I am glad I did or they might have done even worse damage. "Will you call home and tell my mom that I've been suspended so that she will come to my exhibition?" The tactic, by the way, did not work. No one lied to a parent in order to deceive her into celebrating her son's work. The parent didn't arrive unannounced. He still had a great exhibition, but was it enough?

My instinct was to place the educational value on the exhibition and to dread how other factors negatively impact particular students. I realize, however, that I was missing a key component. Yes, exhibition matters. Getting students to own their work and to rise to the challenge of explaining the process to an unexpected visitor can transform the learning experience and make the work more authentic. Having a specific audience in mind (particularly one encouraged to ask deeper questions about the work) also raises the bar, motivating students to create a higher quality product. Placing all the credit on a one-day exhibition, however, misses some key takeaways and learning opportunities.

A Purpose for Learning

For that same student and others, simply showing off the work had its purpose, yes, but it was extremely short-lived. The purpose was just to show off the work. Getting that work published (as they did with this particular narrative assignment) lasted a little longer but also would soon be stripped of its novelty.

My own emphasis on displaying the work led to lulls in productivity and a lack of ownership of students' learning. Kids would do their best work when they began to explore their ideas early on and then again in the end when it was time to exhibit that work. In the spaces between, old habits thrived. Work was done quickly and sometimes shoddily. Collaboration was minimal. In those middle stages, the purpose was missing. No matter how much I thought they would look forward to showing off the work, getting that work ready wasn't essential until the moment seemed inevitably near.

In the midst of this same long-term narrative assignment, however, there were some glimpses of real purpose. I think particularly of a student whose essay brought others to tears when she read it out loud. She had put her best efforts into her work before this point, but her purpose was simple: she wanted a good grade. Seeing how others responded to her work and seeing that it then meant they all wanted her help in editing their own papers gave her a sense of purpose that didn't exist until then. Despite being typically reserved and apt to work on her own rather than in a group, she opened up to others and wanted to see how they could help her make her writing piece even stronger and she delighted in explaining why she thought her essay might have been so powerful in the first place. She went from simply telling her story to knowing that her story mattered and could matter even more. It was inspiring the work of her peers, and that gave her greater purpose. For that student, the audience gave her work meaning. Having someone there to celebrate her work helped her reflect on the experience and to value her process.

A Sustained Audience

Imagine if all students had an audience like this to whom they could turn through the entire process of a long-term project or course unit.

My student whose mother couldn't be there to celebrate his work would now have someone who was going to see his writing not just at the end but as it developed; this audience would be invested in how the writing piece and its author were transformed. The student who became an inspiration for others' writing could push herself to even greater heights with an expert author to turn to who made her see a process developed by years of practice and critique.

It is this exact reason that led me to repeat this same narrative project this school year. I looked back at the successes and the regrets of the first attempt at this project, and I wondered how even small changes could develop a more sustained audience for students. I knew that students often had a very limited audience and that this audience of one—their teacher—was also in charge of their grades. They were limited in how they took risks because of this, and they subsequently limited the heights they might reach.

This school year, each student completing this project takes on two roles: first as a contributing editor (or author) to the book we will publish and secondly as a member of a team preparing our book for publication. By simply adding this structure, students became more accountable to one another; there was always an audience for the work, and that audience's goals could shift. One moment the focus would be on celebration and the next it was on critical feedback. In addition, students know there is an outside audience in mind, and it fuels me as a teacher to seek those opportunities to get them in touch (in person) with the type of audience members they need to consider.

Never Forgetting Why

In the end, though, this work will be exhibited in much the same way. As I near the end of this project, I have let worry seep in. I struggle with the anxiety that someone might have slipped through the cracks of this process and will maybe come alive for a single-night exhibition but won't have the same rich experience of learning.

What keeps me certain that this is less likely, however, is that I've focused not just on purpose in the beginning or audience in the middle, and I know that I won't be focused just on showing off the work in the end. What has kept the whole process moving is the idea of purpose.

Every step of the way, my students and I have made sure that we're asking the most important question: why?

So far, this simple focus has served the learning well. I have my purpose behind assigning these narratives, and I have another purpose for getting the book published. What I'm finding, though, is that my purpose pales in comparison to the multiple purposes the students find on their own.

By providing them with a structure for their work and in using an audience to drive the process, this unit of class opened up an opportunity for students to determine the why behind each step of the process. They began their narratives knowing why they wanted to dig deep into those memories, but they did so in part because time was intentionally taken to question why these narratives might matter. They continued to revise and were challenged by both peers and outside experts (and discovered the opportunity to challenge all participants in our process), and it was planned for us to take time to determine why we should share this work with others and for what purpose. Now, as students make key decisions about which narratives will and will not be published, the purpose changes.

An Educator's Purpose

In the end, as an educator, I know that some purposes are important; I want to set high expectations for students and prepare them for their future. That hasn't changed, but I realize that it also meant that I oversimplified the roadblocks that got in the way. I was heartbroken when my student wanted his mom to come to exhibition so badly he was willing to lie to her. My mistake was that I (unintentionally) was just saddened by the circumstance when I should have realized a more crucial mistake. I realize it now. The exhibition still mattered because that student had a sense of purpose throughout the entire process. For other students, I hadn't offered that same opportunity. I was the absent adult figure missing out on a chance to see how they could shine.

As an educator, I've learned better how to reach students. As with most things, the answer is simple but the reflection can be hard to endure. Rather than focus on shortcomings, though, I move forward with a new purpose and I look forward to every opportunity for students to seek their own purpose in learning.

Choosing Sean

Patrick Yurick, Lead MOOC Instructor
High Tech High Graduate School of Education

Deeper learning experiences are needed by our students. Not in two years, not in six months, not next week. Deeper learning experiences are needed by our students today. Right now. This very moment. We need to structure environments where students are deeply engaged in their lives as they are living them.

I know this is true because during the last days of the 2010/11 school year, the worst fear of every teacher was realized for me. My student was murdered. Sean (15), and his younger brother Kyle (13) tragically died in a murder/suicide, killed by their own father. Sean was my favorite that year. In fact, Sean was my favorite student of all time. He was the kid I wished I could have been at fifteen. He swaggered into school with confidence, intelligence, and a never-ending stream of comic book superhero references. Sean and I became close immediately. This closeness in our relationship only increased as we spent many hours together in my after-school Graphic Novel Project, touring statewide on the weekends, selling comics at conventions.

Learning Is Funny, Sometimes

I am still processing the fact that Sean's death, which affected me so much as a person, has also affected my understanding of pedagogy completely. Deeper learning is a direction that feels right because it allows for a truly student-centered pedagogy. Take this case in point: On one afternoon session of the Graphic Novel Project I asked Sean, along with two other students, to generate up a series of four panel funny strips. We were getting ready to attend a comic convention the following day to sell our comics and I had wanted to try a new marketing gimmick to get customers to our student-run sales table. I told them to make a comic strip, in black and white, on a piece of copy paper. The funniest one was to be the winner. "The winner of what Yurick?" the kids asked. I told them to get to work so that they could see. While the rest of the group was packing, the three team members in charge of marketing worked hurriedly on their comic strips. A half hour passed and I demanded to see the comics. The two other team members handed me their strips. They were funny, but not what I was looking for.

Sean handed me a comic strip. At the top it said, "Muffin-Eats-Man." Four panels were laid out. In the first a man was holding a muffin in his hand and they both were looking at the reader (the muffin had eyes). On the second panel both the man and the muffin looked at each other. On the third panel the muffin suddenly transformed into a muffin-type monster and leered at the frightened looking man. In the fourth panel the muffin, minus the man, rubbed it's full stomach satisfied. I laughed out loud and instructed the three students to go to the copier and make 100 prints of the comic. Sean's eyes went wide, "100 copies… Why?"

"Tomorrow, the first 100 people we see will get a free comic—your comic!" Sean looked really excited. Later after class he approached me and said that he had never seen his art copied 100 times. He felt incredibly honored. The next day he, and the other students, distributed the comic to everyone at the convention as they were urging attendees to visit our booth.

The "Man-Eats-Muffin" comic may not seem like a deeper learning experience, but it was. Through a rapid iteration process, Sean was

able to communicate his vision and see how his work had value, not just to himself, but to others. What I received was a reminder that laughter, silliness, and creativity are accessible to all my students. The most powerful part of the entire experience for me was when I laughed. I hadn't expected to. In that moment, my pedagogy shifted. It reminded me to get out of the way of my students, and allow myself to be open to surprises.

Sean, far right, holding his comic "Muffin-Eats-Man" at the Socal Comic Convention in Oceanside, CA in 2010.

Risk

Facilitating deeper learning experiences is a risky endeavor. The tenets surrounding the practices of deeper learning are new to educators. How are we supposed to know how to successfully balance a "mastery of core academic content" with "collaboration" or "problem-solving & communication"? We know that the goals of deeper learning are ones our students need, but sometimes we are afraid of taking risks because we are unsure that they (and we) will be successful. We are afraid to fail. But this is a fear we must confront. While it may be important to give students access to content, it is equally important that we facilitate experiences that connect them to a love of life. This is the heart of deeper learning practices: a pedagogy centered in student engagement, enrichment, and love of learning.

And, on a very basic level, we risk our hearts. Every year students flood into schools and we, as educators, charge ourselves with caring about these people, and establishing relationships, that we know have expiration dates attached to them. We know that, by the end of the year, we will love this huge group of students that are going to leave us to go onto the rest of their lives. We know that we need to let them go, grieve the loss, and make room in our hearts for a whole new group of students. Changing students yearly isn't the same loss as a student dying—but they both represent the passing of time. We risk all of this because on a plain and simple level—we know that this is the right thing to do in that we know that teaching and passing on knowledge to others is preferable to living in safe seclusion away from others. But would that even save us from experiencing loss? All relationships end, the good and the bad. Life is finite. I wasn't aware of how much this paradigm affected my own heart until the year that Sean died. I had fooled myself, every year prior to that moment, that there was more time. That, although my role as their (the students') teacher was ending, there would be more time. When Sean died I realized that there really is never a guarantee of more time.

I counseled a lot of our students after Sean's death and often we would talk about how terrible the entire experience had been. I would say to my students, "You know, if Sean had died just one year earlier, we never would have known him. He would have never been my student, or your classmate. If I had to choose between not knowing Sean, and having read about a tragedy that happened to an anonymous high school student, and knowing Sean and having to deal with this pain —I would choose knowing Sean." This idea, the idea of choosing Sean, is my motivation. Not only do I want to make sure that kids like Sean, the ones who are weird and love comics, are lifted up within our system, but I also want to ensure that we remember that the lives of our students are happening right now. Death is the one guarantee we have in this existence, but life is something we craft. We need to craft experiences in the classroom that are worthy of our students' time, because now is the only time we really have.

To learn more about the Graphic Novel project, visit http://www.patrickyurick.com/graphic-novel-project/

Project Gallery

Teachers and Students
High Tech High Schools
and other Innovative Schools

In this gallery, we offer a set of *UnBoxed* "cards" that provide quick, concrete glimpses of projects we find inspiring and practices that support teaching and learning. These cards are now freely available on our *UnBoxed* website in a printer-ready format: *http://www.hightechhigh.org/unboxed/cards/*. Simply print, fold, share and discuss. As always, each card on the website refers the reader to a web address where further information is available.


2nd Grade

Colonies, Clusters, and Classrooms

Shelby Fuentes, Grace Kegley, and Chelsea Pasfield, 2nd Grade
High Tech Elementary North County

Students researched a variety of animal communities through fieldwork, experts, non-fiction texts and online resources and then applied their knowledge to our own class and school community to create school-wide norms. Our essential questions were: 1) How do animals act in their communities to help and protect each other? 2) How can we use those characteristics to build guidelines for how we should care for each other in our classroom? Students had three final products. First, individually, students wrote informative paragraphs connecting research on animal communities and how it could apply to our classroom culture. Next, in small groups, students established school norms based off of a researched animal behavior and data collection within our school, and then designed a banner to be hung throughout the halls. Finally, the 2nd grade classes collaborated to design and create a kinetic 'school of fish' art installation comprised of scientifically-inspired ceramic fish that represented the school community. A student-designed kinetic prototype became the basis for final large-scale kinetic mechanism, produced by Mike Amarillas' HTHNC Engineering students.

Teacher Reflection
This project was exciting because it brought all three 2nd grade classes together. Students built quality relationships across the grade level as they worked together. As teachers, we designed this project as a way to collaborate across the grade level and incorporate engineering, art, and science in meaningful ways. As challenging as it was to collaborate with six separate teachers, we think the final project was well worth the effort.

Student Reflection
I like the project because I like to see how animals work together. Also I like to see how animals move, swim and hunt together. My favorite part of the project was when we did our field work. I learned that animals stick together and help each other. —Nethra

To learn more about this project and others, visit http://cepasfield.weebly.com/ ; http://mskegley.weebly.com/ ; http://shelbyfuentes.wix.com/shelbyfuentes


DIAMOND

Roland Barthes' Mythologies

Margaret Noble, Digital Art & Technology, 12th Grade
High Tech High Media Arts

In 1957, an extraordinary work of literature was published detailing concepts far ahead of its time. Roland Barthes wrote Mythologies, a game-changing look at the way humans built the lore around them, and turned the world they knew into a place of fictional characters. A look at stereotypes before stereotypes were a widespread notion, 12th graders contemporized Barthes' ideas into a live multimedia showcase. This one hour, theatrical event was packed with monologues, skits, music and performance art.

Learning goals for this project included researching visual meaning and cultural signs through the semiotic lenses of Roland Barthes. Using this knowledge, students exposed a contemporary problem perpetuated by society and the media that is personally significant. Students then coded a computer program that was visually or sonically experiential and that reinforced their research concept. Finally, students performed a two-minute, rehearsed stage piece that engaged an authentic audience using their research and audio/visual program.

Teacher Reflection
This project was highly experimental and challenging to manage because of the deep interdependence students needed to sustain in order to produce a unified performance in concept and form. In the end, I am proud to say that these 48 students engaged their audience deeply and provoked thinking about what is important to the teen experience and beyond.

Student Reflection
Being introduced to coding was challenging enough but combining it with research, performance and personal perspectives of the real world pushed us to think more creatively. In the end, the exhibition was a lot fun. —Angela Marie

To view the student work visit: *http://margaretnoble.net/educator/mythologies*


THE LANTERN PROJECT


THESE LANTERNS
DESIGNED BY THE 6TH GRADERS
OF HIGH TECH MIDDLE
SHED LIGHT ON THE
LANTERN PROJECT
AN ORGANIZATION FOUNDED
TO HELP ISSUES BIG AND SMALL
AROUND THE WORLD.

The Lantern Project

Maggie Miller, Allie Wong, Gary Gould and Mary Williams, 6th Grade
High Tech Middle School

In this project, the entire 6th grade learned about geometry, unit rate, expenses and revenue by designing and creating their own paper lanterns. At the same time, students explored various cultures around the world through the lens of important global issues. Their final product was an original paper lantern that was to be part of an auction to raise awareness and funds for a community improvement project of their choice through the nonprofit organization, Lantern Projects. The exhibition took place at Centro Cultural de la Raza in Balboa Park.

Teacher Reflection
It was so exciting to see students motivated to learn math so they could use it to create something beautiful. This project incorporated so many academic and non-academic skills from pre-algebra concepts of profit analysis, to persuasive writing, to craftsmanship, and even empathy building. At exhibition the students were proud of their work and the learning behind it.

Student Reflections
My favorite part about this project was how diverse the lanterns were, whether in size, color, or shape. Individually each one came out creative! —Ajok T

The Lantern Project was based around the organization The Lantern Project, which lists countries, each with their own problem and solution. The problems ranged from human trafficking in Cambodia to starving mothers and children in Kenya. The Lantern Project is original in the sense that each student got to choose their part of the world that they want to help. At the same time, students got to learn about geometry by designing their own paper lantern. The students of the team collectively loved how their eyes were opened to the world around them.
—Olivia H

To learn more about this project and others, visit http://lantern-project.weebly.com/


WICKEDSOAPCOMPANY.COM
HTHMA PRESENTS
wicked soap company
MATT MARTIN'S 10TH GRADE CHEMISTRY CLASS


WICKED
SOAP CO.
high tech high media arts


Ben & Jash

The Wicked Soap Company

Matt Martin, 10th Grade Chemistry
High Tech High Media Arts

Students learned about saponification, chemical reactions, pH, strong bases, lab skills, marketing skills and applied what they learned to create high-end, quality soap that was sold competitively in both the online and brick and mortar marketplaces.

Teacher Reflection

Never have I seen students more engaged in a project. Students have generally been interested in the soap making process because it is messy, fun, and creates a beautiful, usable product. When we added an entrepreneurial aspect to this project, student excitement and engagement spiked to a level I have not seen before. Creative, social media, logistics, web design, and marketing departments quickly arose out of necessity. There was so much to do and students could pour their energy into an aspect of the project that appealed to them. A beautiful and functional website was created and successfully run by our students. Facebook, instagram, and yelp pages helped steer business to our online store and in-person selling events at the Earth Day festival, Von's shopping center, and various farmers markets. The logistics team accounted for all of our expenditures and sales. Sales topped $5000 in our first semester which allowed us to give a grant to one of our teachers and a scholarship to a graduating senior. Paid internships were also created and filled by our class and we donated thousands of dollars worth of soap to local San Diegans in need.

Student Reflections

This project is not just about making soap, but being able to work with others and appreciate other's opinions. —Matthew M

Everything in this world, it's all chemistry. —Lucas S

This project taught me a lot about the real world, especially business. —Solomon S

I learned not only how to make soap but how to run a small business through a real world experience. —Marisol F

To learn more about this project and others, visit http://mmarshall2017.weebly.com/chemistry.html

Wat_er We Doing? A California Drought Story

Chris Olivas, Math/Science; Tracy Nathan, Humanities;
Brent Spirnak, Digital Arts, 8th Grade
High Tech Middle North County

In this project students worked together to make a documentary about the current California drought. Students learned about water chemistry, the water cycle, the drought's effect on the environment and economy, and water conservation. Students took extensive notes on current articles related to our drought. They used their new knowledge to write about, plan, film, and edit a documentary to show at our school wide exhibition and at the San Diego Botanical Gardens. Students also created stained glass graphing art pieces to auction off at both exhibitions. The goals of the exhibitions were to bring awareness to the drought and raise money for the San Diego Coastkeeper by auctioning off the student art work, DVDs of the documentary, various water saving items, and donated items.

Teacher Reflection

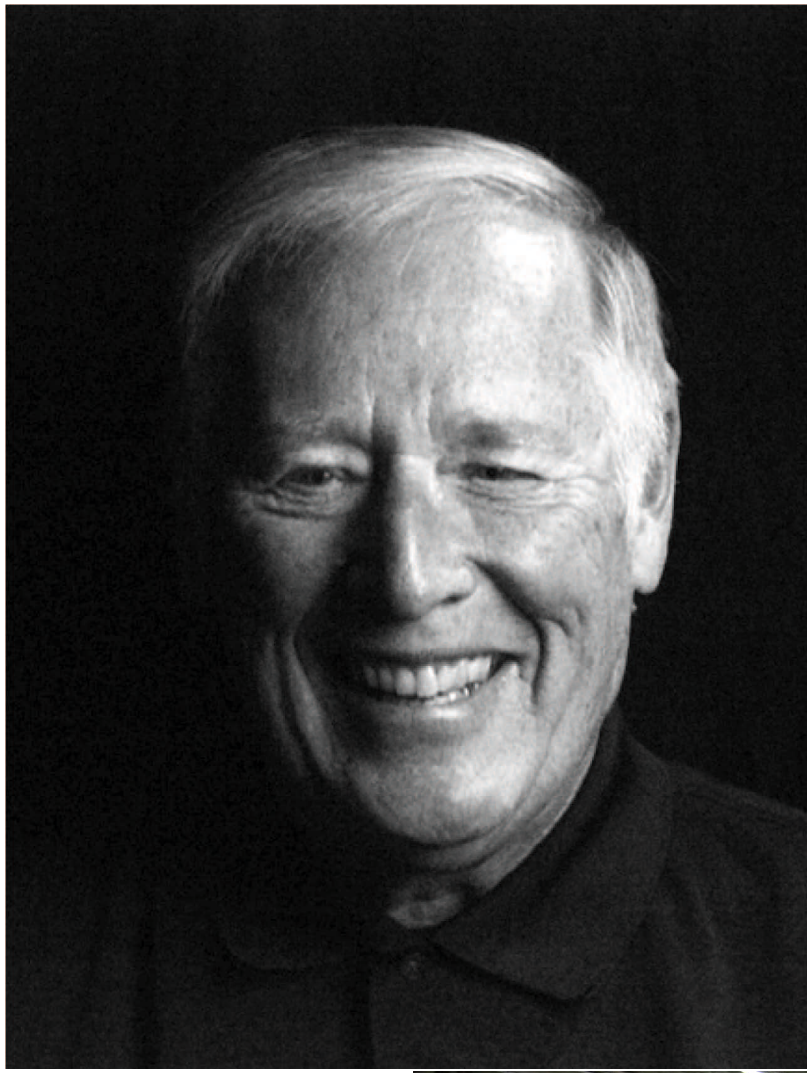
When we started the project, students already understood California was in a drought and we all need to conserve, but they were inspired by all that they did not know. The information revealed through field trips, expert interviews, current articles, and videos was shocking and motivational. When the time came to create our faux stained glass art for auction, students really owned the importance of creating a quality product that would bring in more money for San Diego Coastkeeper. Screening the film at the San Diego Botanical Garden took the students outside of just our school exhibition. They were proud to know that their movie would reach beyond the walls of our school.

Student Reflections

I realized that once we run out of water we have no backup plan. —Kat

This project showed me how our lives depend on a delicately balanced system and that changing one thing can have a huge effect on us- the ripple effect. —Kaitlyn

To learn more about this project and others, visit carterharrisonphotography.com/water/




"They had tears of joy they couldn't believe that someone had documented what they had done; they were proud, they were happy."

Portraits of Resilience

Nicole Lively, 10th Grade Humanities
High Tech High Media Arts

The inspiration for this project came from a student comment, "We learn a lot about the challenges and problems in the world, but what about how people overcome them?" And with that, Portraits of Resilience began. For the first iteration of this project, 50 students conducted 1:1 interviews with 50 veterans to explore these three essential questions: (1) In what ways does war affect human resiliency, (2) How can we resolve conflict aside from war and (3) Why do people fight? During the interview, students photographed their veterans. After the interview, students wrote vignettes to accompany the photographic portraits and capture their veteran's spirit. The portraits were printed into full sized posters and were also published in a book along with the final written vignette. The final products were exhibited on the USS Midway Museum for a week and all veterans were invited to attend our evening exhibition.

Teacher Reflection

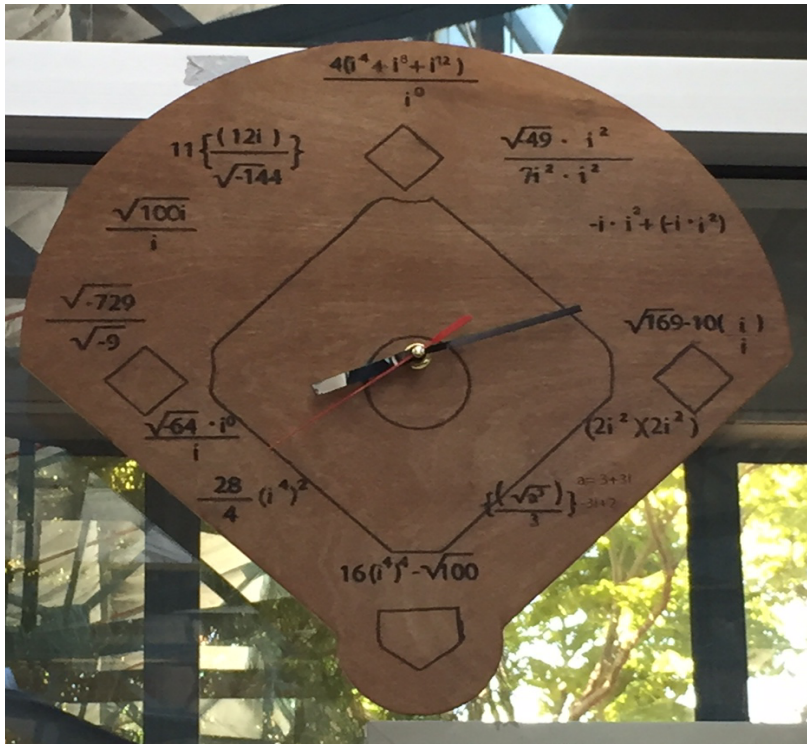
What was particularly powerful about this project was seeing how motivated my students were. I attribute much of this to the authenticity of the audience and the location for exhibition; people totally unaffiliated with our school were really counting on the students to produce excellent work. Throughout the project I consistently heard student remarks such as, "I really want my veteran to be proud," and "I need to make sure that what I write truly represents who they are." This combined with the high visibility of having their work on display in a museum pushed students to raise their own standards and exceed the high expectations that were set.

Student Reflections

Everyone has a story to share and their responses may surprise you. —Sharon O

This project really opened my eyes on the different perspectives of war. —Joshua E

To learn more about this project, visit portraitsofresilience.com


$\frac{40^4 \cdot i^8 + i^{12}}{i^0}$
$11\left\{\frac{(12i)}{\sqrt{-144}}\right\}$
$\frac{\sqrt{49} \cdot i^2}{7i^2 \cdot i^2}$
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$-i \cdot i^2 + (-i \cdot i^2)$
$\frac{\sqrt{-729}}{\sqrt{-9}}$
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$(2i^2)(2i^2)$
$\frac{28}{4}(i^4)^2$
$16(i^4)^4 - \sqrt{100}$


$\frac{72i}{6i}$
i^4
$\frac{48i}{6i} + (i^2)^2$
$36i^2 + 6^2i^4 + \frac{12i}{6i}$
$\frac{32}{8}(i^4)^2 + i^2$
$\frac{32}{8}(i^4) + i^2$
$\frac{20i}{5i}$
$\frac{56^7}{8^7} - i^8$
$\frac{36i}{6i} + i^2$

Best Project of All Time

Sarah Strong, Math
Gary and Jeri-Ann Jacobs High Tech High

Using time as a theme, in this project we explored the mathematical concepts of irrational numbers and complex/imaginary numbers. As we followed the process of mathematicians before us by expanding the number system, we decided the best use of our knowledge was to artfully show our learning through clocks. The clocks had to express their values either through all irrational numbers that were rationalized to make the numbers 1-12 or with imaginary numbers that were made real through the use of exponents.

Teacher Reflection

Math is a beautiful art form and in this project students were given the opportunity to see it as such. They took pride in coming up with the most complicated version of the numbers 1-12 that they could and then creating a theme for their clock that went with either their view of irrational or imaginary things. I loved this project because it was beautifully differentiated for the students (as they were in charge of making the numbers as simple or complex as they wanted) and because it valued the beauty of complex numbers just as they are, without the need to always find them "in the real world." The students were very proud of their clocks at the end and I was proud of them as well!

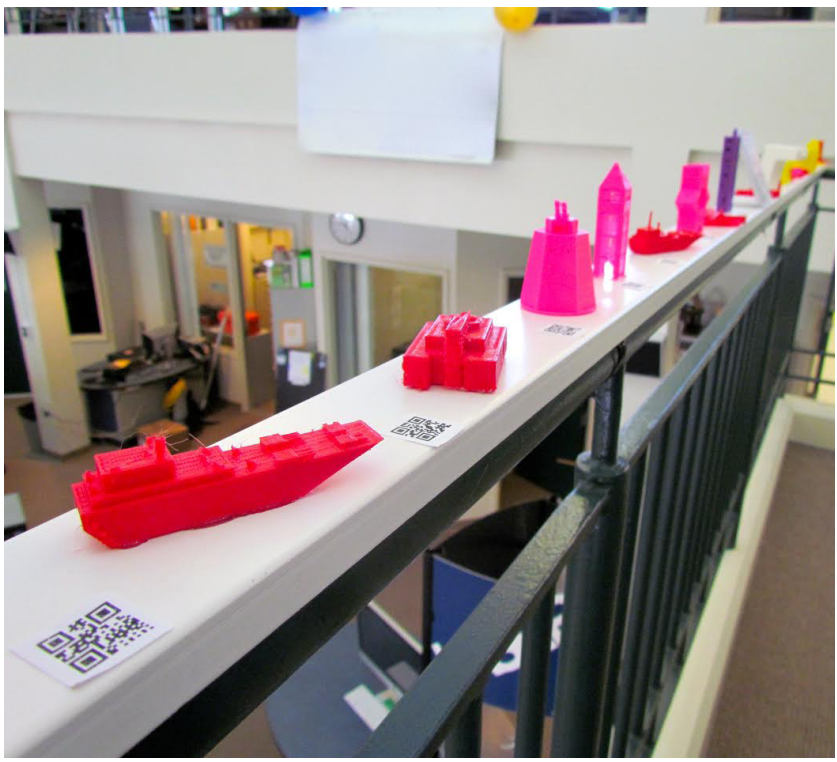
Student Reflections

One thing that stood out to me was that this project made math fun! It made me push myself to make intricate equations and I exceeded my own expectations. —Michelle

I liked this project because it gave me the opportunity to use my creativity in math class! I had to make the equations as complicated as I could and then just make them equal to one. —Taylor

To learn more about this project and others, visit http://sarahgracestrong.weebly.com/best-project-of-all-time.html


The Yalta Conference



3D Printed Timeline

Heather Calabro, Social Studies
Mid-Pacific Institute

Ninth grade students in the MPX Program at Mid-Pacific Institute created a timeline of World War II using 3D printers. Each student chose a WWII event to research. In addition to creating a short documentary about their event, each student wrote an essay about the event through the perspective of a historical figure associated with event, which the student also chose. Hoping to draw in audience members and teach them about WWII, the students designed an artifact using 3D modeling software that would represent a WWII event they chose to research. The printed artifacts were arranged chronologically with qr codes that allowed visitors to pull up the student-created videos about the WWII event corresponding to each 3D-printed artifact, as well as an essay about the event written by the students in the perspective of a historical figure.

Teacher Reflection

It was great to use the 3D printers on campus in an interdisciplinary way. The project incorporated elements of design, history, language arts, and technology, which engaged the students throughout the process. The students were so excited to create a WWII artifact from scratch and see it come to life in the 3D printer.

Student Reflections

The process of learning, step by step, the programs and then seeing your creation come out of the 3D printer was cool! I also really liked how we got to dive deep into a WWII event that particularly interested us. —Dan

It was a great learning experience to imagine that you were in the historical figure's shoes and also to create something in your mind that was then printed so you could hold it in your hand. —Isabel

I liked how this project made me think about how I could best represent my event through a 3D design. —Michael

To learn more about this project and others, visit https://sites.google.com/a/midpac.edu/midpacific3d/


Are Coming !!!!

You Say You Want a Revolution?

Becky Frost and Ashley Carrico, Fifth Grade
High Tech Elementary Explorer

In this action-packed eight-week project, students used primary and secondary resources to research the beginnings of our nation. As historical fiction authors, they wrote first person narratives from the perspective of one of the colonists at Roanoke. After comparing the politics, religions, and immigration trends of the settlers in the New England, Middle, and Southern Colonies, students began to examine what contributed to the desire for independence. As artists and mathematicians, they created shadowboxes inspired by Joseph Cornell that express their interpretations of the big ideas of revolution.

Teacher Reflection
We loved this project for so many reasons and our end of the year student reflections showed that this was a favorite for the majority of scholars in our class as well. The collaboration and compromise required helped our students become better communicators and closer friends. This project also involved so many disciplines as students were asked to work as authors, artists, mathematicians, historians and makers.

Student Reflections
In this box project we learned how to build, use math in real-life situations and lots about the artist Joseph Cornell, but most importantly, we have learned about ourselves. We faced many challenges in this project but we found out that we could overcome all of them. We also learned that in the 1700s nothing was really fair, and freedom was a privilege. As we go into middle school we will always remember our skills we have learned. We loved this project. —Delanie & Audrey

One thing we definitely learned was that to create a masterpiece, you need patience and collaboration. We experienced a time when we couldn't rely on our teachers for every little thing or critique. We had to ask others in the class for critique and help when something went wrong. —Nora & Alanna

To learn more about this project and others, visit http://www.hightechhigh.org/schools/HTEX/?show=projects


Smart girl
Audrey
NON SEQUITUR
by Wiley
SALLY FORTH / by Francesco Marciuliano & Jim Keefe
MARY WORTH / by Karen Moy & Joe Giella
BLONDIE / by Dean Young & John Marshall
THE DUPLEX / by Glenn McCoy
HALLOWEEN COSTUMES OF 2014


Math Woman
AKa Simone
Movie ShowTimes
Movie listings proudly presented by participating theaters.
theatres for updates.
Cinépolis
LUXURY CINEMAS
REGAL
ENTERTAINMENT


SUPER HERO
CLOSET
JOHANNA
JOHNNY
SIMONE
COLBY
AUDREY
HAVEN
PRESLEY
LEAH
JOSHUA

Superheroes Unite!

Diane Hawke, Linda Salamanca and Jen Schultz, First Grade
High Tech Elementary Explorer

The Superhero project explored what superhero qualities each student possessed and how these unique "superpowers" contribute to our classroom and school community. The students investigated fictional superheroes and found a common theme in their powers. The students examined everyday superheroes in their community, learning about their different jobs and responsibilities. Each first grader considered the questions: What super qualities can you bring to better our community? How do superheroes work together? Students designed and made a costume to represent their superpower. The children also created social stories featuring their superpower in a comic book format. The stories were then made into short films with the students role playing in their superhero costume. These films and the students' experiences were then shared at a school gathering.

Teacher Reflection

There were several things we loved about this project. An absolute highlight was the excitement in the children's faces when they realized that everyone possesses a superpower and no matter how old you are, you can make a difference. We often found them using their superpowers like Grit Girl, Thinking Man and Happiness Gal on the playground or during class time when no one was watching. At a table you would hear "Don't give up, use grit!" when participating in a difficult math activity or "I'll get a band-aid!" as Helpful Boy ran off to help a friend who had fallen down on the blacktop. It empowered the children to take ownership in making a positive change in their classroom and school.

Student Reflections

The Superhero project taught me that I should help people and I should take big risks for the people I care for. —Nia

I learned that superheroes are real and help us everyday like police officers and firefighters. Everyone is a superhero! —Giovanni

To learn more about this project and others, visit http://www.hightechhigh.org/schools/HTEX/?show=projects

Staircases to Nowhere

Jeff Robin and Andrew Gloag, Art and Physics
Gary and Jerri-Ann Jacobs High Tech High

Seniors used physics, art, and carpentry to plan and build model and life-sized staircases of their own designs. First students designed 1:10 scale model staircases alone or with a partner. They had to find some mathematical equation or pattern that modeled something about their staircase and show it in a poster. In the next phase of the project, students designed 1:5 model staircases, which they had to carefully plan and execute. The larger size required them to be more detail-oriented in their designs. In the final stage of the project, students worked in groups to build 1:1 life scale staircases around the school. The four full stairway installations will be permanent and must hold up to significant human teenage wear and tear. The 1:1 staircases required teamwork as well as design, engineering, physics, and carpentry skills.

Teacher Reflection

The scale models, the one-to-ten, were basically whimsy and play. In the one-to-five, students were thinking about structure and how to build these things. The full sized ones were practical and buildable. They all lent different things to the creative process of the students. In the first staircase they learned that play is important to design. In the second, they learned that planning is important to creating something. In the third one, they learned that collaboration is critical to doing something bigger than yourself.

Student Reflections

I learned that it takes an immense amount of planning to produce things in the real world. You can't just B.S. something that you want to look nice. —Sophie

It requires stepping out of your comfort zone and realizing that you have to put forth a team effort, that everyone does work. Sometimes it's work you don't really want to do, but you do it anyway. —Czarina

To learn more about this project and others, visit http://dp.hightechhigh.org/~jrobin/Projects.html

Who Walks Here: The Journey of Our People and Our Land

Shayna Cribbs, Brooke Newman, Misa Adams, Christine Kuhl and Julie Hutchins, Third Grade
High Tech Elementary Explorer

The Who Walks Here project came from the teachers' passion for nature and wanting our students to explore the outside world. The project began with an overnight camping trip. Students visited places in San Diego County, and worked with local experts, to experience what life was like for the Kumeyaay (first people who lived in San Diego) and to see first-hand our local birds and native plants. Each student researched a local bird and a native plant, and their final pictures and research were put together into a published field guide that was donated to the experts they worked with. Students worked to make scientific drawings of their birds by participating in the critique process, making multiple drafts of their birds, and working with high school buddies. Students researched more about the Kumeyaay and wrote historical fiction stories or legends. After learning about the footprint the Kumeyaay left on the land, the students thought about the footprint they want to leave on the land.

Teacher Reflection
My hope with this project was for my students to gain an appreciation for nature and want to protect it. I did not anticipate that through this project a group of "birders" would be born. A handful of my third graders became passionate about birds. They would want to take walks on the weekends to look for birds, and they would bring bird books to school to read and to share with one another. Many also worked on drawing drafts of other birds in their free time.

Student Reflections
We should all love nature and enjoy it and be thankful for its beauty and what it provides for us. —Camille

The Kumeyaay barely changed the land. They treated it with respect and they weren't doing any harm and they never ever wasted food, drinks, or any other kind of resources. —Alex

To learn more about this project and others, visit http://www.hightechhigh.org/schools/HTEX/?show=projects

The Bee Project

Rhea Manguil and Marissa Adams, Second Grade
High Tech Elementary Explorer

Why do we need honey bees and how do they affect our world? In order to answer these questions, second graders investigated the role of bees in our ecosystem, and the various ways bees are being threatened. Once their research was complete, students became advocates for the bees. Working collaboratively in groups, students wrote and performed bee plays to educate the school community about the threats to bees. They also wrote letters to the city and large corporations, planted over 200 bee-friendly plants, and built beehives to donate to a community organization in Mexicali.

Teacher Reflection

This has been one of my favorite projects because it gave students the opportunity to advocate for what they feel is important and to make a change in our community. I knew this project was meaningful when students insisted we write letters to our local government asking if they could plant more pesticide-free flowers for bees. Our students were so proud as they stood by the plants that they put into the ground with their own hands. I think that what impacted me most as a teacher was to see my students take ownership of their learning. When they began to understand the problems that honeybees were facing, they also realized that there were ways for them to advocate for change. Students began to ask questions about why people, namely adults and big corporations, are not doing more to help the honeybees. After building beehives to send to Mexicali to help a community of women and children there, students felt a sense of accomplishment and contribution to solving a problem that they realized is affecting us all.

Student Reflections

I learned that if we didn't have bees we wouldn't have most of our favorite food. —Silas

Working in a group helped me because I got more ideas. None of us is as smart as all of us. —Aiden

To learn more about this project and others, visit http://www.hightechhigh.org/schools/HTEX/?show=projects

Writing "Downtown": Bringing Student Voice into Writing Instruction

Sheldon C. Krieger
Lakeview High School
Chicago, Ill

My first year of teaching in Chicago was different for many reasons. I had worked for two years in the alternative school system in Philadelphia, where I had become accustomed to facial tattoos, talk of violence and drugs, and a highly transient population. At this school in Chicago, however, these were no longer common facets of the student population. The low-income, at-risk students who attended our school were seeking a future in technology or business (or perhaps simply seeking refuge from their characteristically dangerous neighborhood schools). Regardless, gone were the tattoos and gang paraphernalia. Until Charlie.

Charlie stood out among his peers for two very different reasons. For one, he was one of few students who was visibly inked, noticeable mostly when he would roll up his long sleeves while working. Also, he was a teen parent, which was far less common in this school than it was for students in the alternative schools in Philadelphia, and during our chats he would allude to both frequent drug use and gang activity. At the same time, as shown through his grades, work, and participation,

Charlie was one of the most driven, diligent, and determined students in his class. Most notable, however, was the way he would carry himself. More than his peers, and more than most students I had worked with up to that point, he was professional, always speaking kindly and politely both to other students and the staff. I had begun to wonder if this was his demeanor both in and out of school.

As I got to know Charlie more, we chatted about his family and his background. I was surprised at both his detail and openness. The impact and influence of his family structure on his overall demeanor was apparent when I asked him to describe himself in the different settings, and he noted that he was "still the same Charlie—nice, sweet, polite—but at the same time, … kinda rough around the edges" outside of school. While we didn't explicitly discuss differences in his language, it was apparent that Charlie knew how to both act and speak based on who was around and where he was because of his family.

Eventually, Charlie and I also discussed his goals. Interestingly, when I asked him what he felt he needed to work on in school, his first response was "grammar." Charlie went on to elaborate, explaining that "everybody say my grammar is okay and everything, but there's always room for improvement. My word choice ain't the best." It became increasingly clear while talking with Charlie that he wanted to master the skills and knowledge needed to do well in the traditional ideals of schooling and business, including the rules of Standard English. Yet, despite his professional demeanor, his language – both written and oral – was notably marked with characteristics of Black English (or as some refer to it, African American Vernacular English, or AAVE).

As a white male teaching predominately Black students, I had long been conflicted in regard to teaching grammar, particularly in writing, because it entailed focusing on Standard English. Was it harmful to my students' identities if I promoted Standard English, written and oral, to give them the needed agency to succeed in the professional world of which they were expected to take part someday? Was I doing my students a disservice if I honored their vernacular English in order to build relationships and create a safe, open, and culturally sustaining classroom? What was the focus of my instruction and my classroom, particularly in regards to the teaching of writing?

Because Charlie had the skills and self-recognition to effectively code-switch his behavior and his intonation between his home and school settings, I saw an opportunity to work with him and explore the challenging give-and-take of tackling Standard English with a student whose home language is a type of non-Standard English. I began to wonder how I might utilize Charlie's working knowledge of code-switching in school to inform my own writing instruction.

With this in mind, I knew I wanted to work independently with Charlie outside of the classroom on his writing, using our work together as a gateway to discuss his thoughts regarding his written language in and out of school, what he thought he should be learning, and how he responded to different instructional strategies. I wanted to take myself out of the decision-making position, and let Charlie figure out and express what he wanted for his writing and his language. After all, what is a conversation about student voice in the classroom without student voice itself?

Working with Charlie

Early in my career, I had used common and well-known techniques and methods to teach writing including hamburger paragraphs (a topic sentence, three supporting sentences, and a concluding sentence), five-paragraph essays (an introductory paragraph, three body paragraphs, and a concluding paragraph), and direct grammar instruction (subject-verb agreement, prepositional phrases, as well as dependent and independent clauses). While these tools proved useful in certain ways, by and large they led to dry, formulaic output from the students that was neither engaging for the reader nor of high quality from the students.

In working with Charlie, the first piece I had him write was a traditional, five-paragraph essay in order to see how well he understood and could write in the common format. I gave Charlie the option to write either an informative or persuasive essay, and Charlie asked if he could combine the two options. I said he could.

While Charlie seemed comfortable with the five-paragraph format as he was writing, the rough draft had areas for improvement. Overall, the structure of the essay made good use of his brainstorm and outline.

However, the ideas and content were a bit jumbled. He began his essay with his thesis statement, and his entire introduction highlighted the usefulness of Chicago's public transit. Instead of fleshing out this persuasive idea, Charlie's essay veered off into the troubles with the transit system and how it is unreliable. Charlie's essay also lacked a formal conclusion paragraph, and instead he tacked on a conclusion sentence at the end of his final body paragraph.

Perhaps more noticeable in this piece, too, were Charlie's Standard English convention errors. While he had run-on sentences, misspellings, and incorrect punctuation throughout his pre-assessment writing (I had him write a journal entry, a letter to a friend, and a report on his favorite musician prior to our work together to see how he wrote in different genres), these errors seemed more noticeable to me during our session together. This was most likely due to the portion of the session where I gave him direct feedback. The most interesting part of giving Charlie feedback came when I tried to explain passive voice and why it should be avoided in writing. While he followed along as I addressed these issues, in our final interview, Charlie admitted at first that he learned "nothing," saying that "it was kinda tough … and you [the teacher] did all those corrections and everything, and that's the part that made it tough."

Shortly before working with Charlie, I had become familiar with various, more unconventional techniques from Peter Elbow's Writing Without Teachers (1998). I had dabbled with some of the methods in my classes, mostly the "freewriting" in which the writer writes without stopping for a short period of time (usually ten minutes), producing a stream of consciousness text (p. 3).

As I planned on working with Charlie, I decided to teach him using Elbow's "Desperation Writing." This activity required Charlie to begin by freewriting. Afterwards, he took index cards and began rereading what he had written. As he reread, Charlie was told to jot down "any thought, feeling, perception, or image" that came to mind, one per card (p. 62). From there, I instructed Charlie to sort through his index cards and look for patterns and relationships, ways to connect his thoughts and ideas. After doing so, the activity deviated slightly from Elbow's original description because I had Charlie create a metaphor for one of the ideas or one of the relationships between the ideas that

intrigued him. Then, using that metaphor as the first line, Charlie wrote for another ten minutes. Charlie wrote the following passages:

(Freewriting) *Today is a god friday I am going to pick up my check which is always a plus no matter what. I'm going to go over my favorite cousin's house which is good because we haven't hung out in a long while. I am going to work tomorrow which lets me get out more to have some nice time outdoors, outside at my house is healthy to me. I feel as if you can have deep thoughts with no loud interuptions. You can go into a different world and a deep state of imagination. The possibilities are endless when you think alone by yourself. I also believe you can figure yourself out. You start to think of the past more and everything clicks right there you no longer need time to think because you can eaisly figure things out with a fully empty mind. I no that was a run on sentence but I went into another world when I was just writing. I ended it though once I thought about if I put a sentence. I seen...*[unfinished sentence].

("Desperation Writing") *Writing made my ideas flow from my mind onto the paper like a running ocean. This quote means when I write, I write down how I talk in my mind. When I write I say things in my head and just write them. I start to write and what ever happens … happens there is no direction in the writing it allows me to be free and get some time with a clear mind. I'm not crazy.*

While Charlie didn't entirely lose sight of professionalism during this session—making note on one of his note cards that he misspelled "know" for "no", and also realizing in the freewrite he had written a run-on sentence—these passages primarily showcase Charlie's enjoyment of exploring his voice and thinking critically. According to Charlie, the focus of his freewrite is about "deep thoughts … and a deep state of imagination." This level of insight, which his essay lacked, speaks to the importance he places on critical thinking and self-discovery, far more thought provoking concepts than public transportation.

What became clear during our reflective interview was the impact of the feedback from this second session. Unlike the session with the more traditional five-paragraph approach in which I provided feedback for Charlie with what he did well and what he needed to fix, I utilized one

of Elbow's feedback methods in which I equated my responses as a reader to colors as a way to convey the effect Charlie's piece had on me as his audience (p. 91). Charlie really enjoyed this part, responding: *It was fun…because I had to use my mind. And I also had to listen… and I had to think about quotes and stuff you all said…I got to figure out something about myself, how when I write, I just put down what's on my mind and get stuff off my chest.*

Charlie added, "And I got to get a bunch of compliments. I seen what a good writer I was." I felt this was crucial because in our first meeting, Charlie told me how writing had been a "big, big issue in… the 7th grade," and how he "never felt [he] was good [at writing] until [he] got to high school."

Interestingly, during the final interview, Charlie said he liked the essay better because he "thought it out" and "made a little web so [he] could get [his] thoughts together. And it looked and sounded professional. … it was like something someone downtown would write." For Charlie, it appears the epitome of professionalism is "downtown," the business-centered section of the city where men and women go to work in offices in suits, or successful professionals. As such, he wants his writing to mimic the way he sees and imagines these professionals writing—Standard English.

Although he indicated he liked his essay more, Charlie also said he preferred the instructional style of the second session because, as he explained, "you didn't tell me exactly what to write about, but you gave me a range and I worked in that range." For Charlie, the first instructional style yielded a better piece because it was more professional and aligned to Standard English, yet he enjoyed the second instructional style more because it lent itself to his voice and gave him a sense of agency the prior style did not.

Learning from Charlie

Working with Charlie individually, I realized more than ever how complicated writing instruction truly is. Charlie concluded that he preferred professional pieces structured around conventions and formats of Standard English. However, he preferred writing instruction that catered to his individual voice and style, allowing for

non-Standard English in less traditional pieces. I recognize this case study as a snapshot of this particular student, and in no way do I intend to generalize or universalize his experience. I believe my time with Charlie explored one student's thoughts and ideas about his language in an educational setting, leading to my own implications for teaching writing to other students, no matter their home languages or backgrounds. Still, with this seemingly contradictory response to the different methods of writing instruction, I was admittedly a bit baffled about what—if anything—I had discovered. How could I honor Charlie's profound and insightful thoughts yielded from the non-traditional approaches while supplying him with the skills in Standard English he explicitly sought after?

I have been left to consider three key issues moving forward:

1. How do I balance the less common instructional techniques like freewriting and Desperation Writing that Charlie responded so well to with the more traditional methods that more directly support, strengthen, and align to Standard English?

2. How do I provide feedback for students' writing that is both encouraging and open to their languages and identities, yet helpful in having them master the grammar and conventions of Standard English?

3. As I work with my students, respecting their varieties of language while sharpening their Standard English skills, in what ways can I support my colleagues, administration and others in remaining more open to the power that the students carry in their own languages?

Although I am still grappling with my writing instruction in these ways, I believe I must focus on my ability to make students' audiences transparent to them as they write. Through both writing sessions and the pre-assessment writing Charlie completed, every piece he wrote demonstrated further the significance of knowing one's audience and attending to that audience. It is through that awareness of who is reading the piece—or, rather, for whom the student is writing—that one can then garner the ability to decide to write in Standard English, non-Standard English, or any combination of languages and styles.

Working with Charlie, I recognize more than ever the important role that awareness of one's audience plays in writing as a way to give the student agency, choice, and voice. I believe that no matter the piece a student is writing, if the student is fully cognizant of his audience, only then can he begin to write with agency and power—to write with the voice he intends.

Although my time with Charlie as a student has ended, it has given me a new direction to begin to take with my current students and my writing instruction, for students with and without backgrounds in Standard English.

Amongst his peers, Charlie displayed a higher confidence in every aspect of his language except for writing in English class. Yet, he said in his interview that participating in the case study made him feel like a better writer and gave him more confidence, particularly the second session framed around a non-traditional approach. It would seem as if my students who are less confident than Charlie in their speaking and writing of Standard English, a more non-traditional approach as explored and implemented in this case study would benefit them, as it did Charlie. And knowing my other students—their dreams and desires to succeed in, out of, and beyond high school—I know many of them see writing "downtown" as a key to achievement as well. Therefore, I must continue to explore alternative approaches to build their Standard English skills in their writing.

Like my students must do in their writing, I must attend to my audience. Using what I have learned while working with Charlie, I hope to help build writer identities in my students as strong as Chicago's skyscrapers are tall.

References

Elbow, P. (1998). *Writing without teachers*. Oxford, England: Oxford University Press.

Creativity is a Decision Anyone Can Make

Robert J. Sternberg
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Creativity is a decision. Teaching for creativity means encouraging students to (a) create, (b) invent, (c) discover, (d) imagine if…, (e) suppose that…, (f) predict. Teaching for creativity requires that teachers provide an environment that fosters creativity. This means they not only support and encourage creativity, but also demonstrate it themselves and reward it when students display it. In other words, teachers need not only to talk the talk, but also to walk the walk.

How can we encourage students to decide for creativity? Students develop creativity not when they are told to, but when they are shown how. Teachers do this by teaching creatively and by demonstrating the following creative behaviors as they interact with students. Here are a few things teachers can do to encourage students' creativity.

1. Instruct, Assess for and Reward Creativity

Students will quickly recognize the discrepancy when teachers say they value creativity but award the top grades to students who hand in the neatest notebooks or answer the most factual questions correctly. If

teachers want students to decide for creativity they need to recognize and reward creativity. This can be a challenge because, by definition, a student's creative response to a teacher's assignment may be quite different from what the teacher had in mind.

If teachers give only multiple-choice tests, students quickly learn the type of restricted thinking embodied in those tests, even if teachers claim to value creative thinking. If teachers want to encourage creativity, they need to include at least some opportunities for creative thought in assignments and tests. They should ask questions that require a combination of factual recall, analytic thinking, and creative thinking. For example, students might be asked to learn about a law, analyze the law, and then think about how the law might be improved.

2. Encourage Idea Generation

Creative people like to generate lots of ideas. When initial ideas don't seem to have much value, it is best not just to criticize, but instead to suggest that students find new approaches, preferably ones that incorporate at least some aspects of the previous ideas. Students should be praised for generating ideas, regardless of whether some are silly or unrelated, while being encouraged to identify and develop their best ideas into high-quality projects. A good way to generate new ideas is to think across subjects and disciplines. Creative ideas and insights often result from integrating material across subject areas, not from memorizing and reciting material.

3. Recognize Knowledge Can Be Both a Help and a Hindrance

Knowledge can be either a spur to creativity or a damper. On the one hand, no one can be creative without knowledge. Quite simply, you cannot go beyond the existing state of knowledge if you do not know what that state is. However, those who have an expert level of knowledge can experience tunnel vision, narrow thinking, and entrenchment. Experts can become so stuck in a way of thinking that they become unable to extricate themselves from it. When a person believes that he or she knows everything there is to know, he or she may never show truly meaningful creativity again. Novices, on the other hand, lack expert knowledge, but may gain in flexibility what they lose in knowledge base. In other words, they may be able to see things in new ways that experts miss.

Ideally the teaching-learning process is a two-way process. Teachers have as much to learn from their students as students have to learn from their teachers. Teachers have knowledge students do not have, but students have flexibility teachers do not have—precisely because they do not know as much. When teachers are able to learn from, as well as teach, their students, they open up channels for creativity that otherwise would remain closed.

4. Question Assumptions

Widely shared assumptions are the most dangerous because often people do not even know they have these assumptions. Creative people question assumptions and eventually lead others to do the same. Questioning assumptions is part of the analytical thinking involved in creativity. To take two famous examples, when Copernicus suggested that Earth revolves around the sun, his suggestion was viewed as preposterous because everyone could see that the sun revolves around Earth. Galileo's ideas, including the relative rates of falling objects, caused him to be banned as a heretic. Teachers can be role models for questioning assumptions by helping students realize that what they assume they know may not be true.

5. Redefine Problems

Redefining a problem means taking a problem and turning it on its head. Many times in life individuals have a problem and they just don't see how to solve it. They are stuck in a box. Redefining a problem essentially means extricating yourself from the box. There are many ways teachers can encourage students to define and redefine problems for themselves, rather than—as is so often the case—doing it for them. Teachers (and parents) can promote creativity by encouraging students to define and redefine their own problems and projects. They can have students choose their own topics for papers or presentations, choose their own ways of solving problems, and sometimes have them choose again if they discover that their selection didn't work out.

6. Prepare Students to Anticipate and Overcome Resistance

The question is not whether creative people will encounter resistance; that they will encounter resistance is a fact. The question is whether

the creative thinker has the fortitude to persevere and to go against the crowd. Truly creative thinkers accept the short-term discomfort because they recognize that they can make a difference in the long term. But often it is a long while before the value of creative ideas is recognized and appreciated.

Teachers can prepare students for these types of experiences by describing resistance that they, their friends, and well-known figures in society have faced while trying to be creative; otherwise, students may think that they are the only ones confronted by resistance. Include stories about people who weren't supportive, about bad grades for unwelcome ideas, and about frosty receptions to what they may have thought were their best ideas. To help students deal with resistance, teachers can remind them of the many creative people whose ideas were initially shunned and help them to develop an inner sense of awe before the creative act. When students attempt to overcome resistance, they should be praised for the effort, whether or not they were entirely successful.

7. Prepare Students To Sell Their Creative Ideas

The positive side of overcoming resistance is selling your idea. Everyone would like to assume that their wonderful, creative ideas will sell themselves. But as Galileo, Edvard Munch, Toni Morrison, Sylvia Plath, and millions of others have discovered, they do not. On the contrary, creative ideas, and the people who propose them, are usually viewed with suspicion and distrust. Because people are comfortable with the ways they already think, and because they probably have a vested interest in their existing way of thinking, it can be extremely difficult to dislodge them from their current way of thinking.

Thus, students need to learn how to persuade other people of the value of their ideas. This selling is part of the practical aspect of creative thinking. If students do a science project, it is a good idea for them present it and demonstrate why it makes an important contribution. If they create a piece of artwork, they should be prepared to describe why they think it has value. Teachers too may find themselves having to justify their creative ideas about teaching to their principal or school board. Rather than cursing the dimness of those who do not appreciate their vision, many creative people, like the artist Christo, think of this

as part of the creative process. Teachers can prepare their students for the same kind of experience (which is also good preparation for active citizenship).

8. Encourage Sensible Risk-Taking

Creative people take sensible risks and produce ideas that others may ultimately admire and respect as trend-setting. In taking these risks, creative people sometimes make mistakes, fail, and fall flat on their faces. The idea of home computers once seemed like a really risky idea!

Few students are willing to take many risks in school, because they learn that taking risks can be costly. Perfect test scores and papers receive praise and open up future possibilities. Teachers may inadvertently advocate that students only learn to "play it safe" when they give assignments without choices and allow only particular answers to questions. Thus, teachers need not only to encourage sensible risk-taking, but also to reward it.

The best way to encourage risk taking is to tell students that you value projects that are "outside the box," if they still fulfill the purposes of an assignment. Then show them that you really value such projects with high grades. What you may want to emphasize, however, is that creativity involves fashioning not just a novel product, but one that helps others gain new perspectives through its elegant design and well crafted execution.

If students are encouraged to take risks, then they must be allowed to make mistakes. Every great thinker—Freud, Chomsky, Darwin—you name one, has made mistakes, even serious ones. The key is not avoiding mistakes but learning from them. An important part of teaching creativity is teaching the cognitive and emotional process of diagnosing mistakes and trying again.

9. Take Time

Our society is in a hurry. People eat fast food, rush from one place to another, and value quickness. But creative thinking, unlike multiple-choice question answering, often takes considerable time. Creative people are able to work on a project or task for a long time without

immediate rewards. Students must learn that rewards are not always immediate and that there are benefits to delaying gratification. The fact of the matter is that, in the short term, people are often ignored when they do creative work or even punished for doing it.

Many people believe that they should reward students immediately for good performance, and that students should expect rewards. This style of teaching and parenting emphasizes the here and now and often comes at the expense of what is best in the long term.

10. Encourage Tolerance of Ambiguity

People often like things to be black and white. There are a lot of grays in creative work. Artists working on new paintings and writers working on new books often report feeling scattered and unsure in their thoughts. Scientists often are not sure whether the theory they have developed is exactly correct. Closely related to taking time, creative thinkers need to be able to tolerate ambiguity and uncertainty, working on something that may not make complete sense, even to themselves, until they get it just right.

James Watson and Francis Crick are famous for discovering the structure of DNA. What many people who know their names may not realize is that the idea of a helical structure originated not with Watson and Crick but rather with Linus Pauling. However, Pauling did not quite get it right, proposing a triple helix. His proposal was useful to Watson and Crick, who then realized that the structure was of a double, not triple helix. Had Pauling tolerated ambiguity a bit longer, he might have gained credit for this discovery that completely changed our understanding of genetics.

To help students become creative, teachers need to encourage them to accept and extend the period in which their ideas do not quite converge. Students need to be taught that uncertainty and discomfort are a part of living a creative life. Ultimately, they will benefit from their tolerance of ambiguity by coming up with better ideas.

11. Encourage Creative Collaboration

Creative performance often is viewed as a solitary occupation. We may picture the writer writing alone in a studio, the artist painting in

a solitary loft, or the musician practicing endlessly in a small music room. In reality, people often work in groups. Collaboration can spur creativity. An essential aspect of working with other people and getting the most out of collaborative creative activity is to imagine oneself in other people's shoes. Individuals can broaden their perspective by learning to see the world from different points of view. Genuinely hearing other people is not easy, especially if they look, talk, and think differently. Gaining that ability enhances creativity.

12. Recognize Person/Environment Fit

What is judged as creative is an interaction between a person and the environment. The very same product that is rewarded as creative in one time or place may be scorned in another because it is viewed as simply outrageous, like Stravinsky's "Rite of Spring," or ignored in another because it is too far ahead of its time, like some of Leonardo DaVinci's imagined machines. Encourage students to examine environments to help them learn to select and match environments with their skills. Help students find what excites them to unleash their best creative performances. People who truly excel creatively in a pursuit, whether vocational or avocational, almost always genuinely love what they do. Remember that what excites students may not be what excites teachers—or parents.

13. Emphasize the Ethical Use of Creativity

Creativity, like any other set of skills, can be used for good or bad ends. Put another way, creativity has a dark as well as a bright side. Modern-day wars, for example, show creativity at its darkest. They use the fruits of creativity for destructive rather than constructive ends. Students need to be shown how creativity can be used to make the world a better place to live, and they need to understand the consequences of creativity when it is used destructively.

Creativity, then, is in large part a decision: Make it and encourage students to do the same!

Suggested Readings

Amabile, T.M. (1996). *Creativity in context*. Boulder, CO: Westview.

Csikszentmihalyi, M. (2013). *Creativity: The psychology of discovery and invention*. New York: HarperCollins.

Gardner, H. (2011). *Creating minds*. New York: Basic Books.

Kaufman, J. C. (2009). *Creativity 101*. New York: Springer.

Kaufman, J. C., & Sternberg, R. J. (Eds.) (2010). *Cambridge handbook of creativity*. New York: Cambridge University Press.

Plucker, J. A., Kaufman, J. C., & Beghetto, R. A. (2015). *What we know about creativity*. Washington, DC: Partnership for 21st Century Skills.

Reis, S., & Renzulli, J. S. (2014). *The schoolwide enrichment model* (3rd ed.). Waco, TX: Prufrock Press.

Simonton, D.K. (1994). *Greatness: Who makes history and why?* New York: Guilford.

Sternberg, R. J., & Grigorenko, E. L. (2007). *Teaching for successful intelligence* (2nd ed.). Thousand Oaks, CA: Corwin.

Sternberg, R. J., & Lubart, T. I. (1995a). *Defying the crowd: Cultivating creativity in a culture of conformity*. New York: Free Press.

Photo courtesy of Randy Scherer

Every Classroom Should Be A Maker Space

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Ten years ago, I walked past a newsstand and out of the myriad of multicolored covers, one jumped out at me: MAKE magazine. As someone who grew up making stuff, this magazine spoke directly to me.

I bought copies and immediately brought them to the director of my school. I remember triumphantly exclaiming "We should show this to all of the teachers—think of the projects we can do!" A decade later, well-intentioned schools that create dedicated "maker spaces" worry me.

For the uninitiated, a maker space often houses ultramodern tools like a laser cutter or 3D printers, mixed with drill presses, table saws, and soldering irons, or perhaps screen printing equipment or sewing machines. My fear is that stand-alone maker spaces will cause the powerful act of creation to be confined to only certain parts of the school building. I worry that yesterday's centralized computer lab—which we rightly democratized and decentralized by putting computers in every classroom—is today's maker space.

When I walk past a new room being outfitted with a laser cutter or a drill press and hear, "This is our maker space!" I am tempted to ask: "What happens in all of the other spaces? What do people do there?" The act of creation is transformative. An individual's self-image is forever changed when he or she can hold up a real object—a real contribution to the world—and say, "I made this." In a time when students' lives are increasingly virtual, abstract and vicarious experiences, it is every teacher's job to make learning, and life, "hands-on."

All Classes Can Be Designed Around Meaningful Creation

In the 11th grade humanities classes I have taught at High Tech High, we confront these issues in the context of English and history. As a result of my belief that deeper learning grows out of active, transformative experiences, we make things in class; because of my experiences in and out of school, and out of a love for a prominent aspect of my discipline, we often make books.

The tried-and-true way to learn about great literature is to force students to read it, and then prove that they read it by writing an essay in which they explore a theme or elements of the author's style. Though a classic assignment, the student likely made nothing new. It is unlikely that the essay explored a theme found in Shakespeare or The Great Gatsby that had previously gone undiscovered. It is also unlikely that anyone other than the teacher will read that essay. The teacher probably wrote many of the same comments on each essay that was graded. The students likely stuck them in a pile or threw them away after the grade was received.

In my classes, I want us all to learn from great literature by reading. However, we access that content—and much more—by making things in response. Last semester, we published books. Every eleventh grader in my class was partnered with a second grader as a "reading buddy." Twice a week for six weeks, we met with our reading buddies and did focused work around literacy with their books from class, the library, and from home. Every day, I reminded my students that they had three jobs: to help their buddy become a better reader; to help their buddy love reading so much that he or she would read independently over the summer; and to secretly learn everything they could about their buddy

so that they could surprise him or her with an original published work of children's literature at the end of the project.

Early on, I held up published books ranging from 50 to approximately 150 pages. "This is what you will make," I told the class. Naturally, there were gasps of disbelief.

"It's no big deal," I told them. I flipped through one of the books, emphasizing the fact that it is a real thing, and cool. "This will be pretty impressive when you hand your book to your buddy and it has your name on the cover." I smiled broadly. Maybe two or three students were convinced.

In between meetings with our second-grade buddies, we read and analyzed classic literature, and we also drafted our own stories. Everyone read The Great Gatsby and Slaughterhouse Five, which I selected for the lessons that they offer for young writers. Many students selected other authors to study in depth, such as Zora Neale Hurston, Ray Bradbury, and Harper Lee. We held regular Socratic Seminars and analyzed each author's style. We discussed themes and structure, setting and character development, and diction and figurative language.

Every eleventh grade student identified his or her literary influences, and the specific elements of individual author's styles that they hoped to capture and apply in their original children's literature. We tried to understand what specific elements of each author's style we could emulate. What could we learn from F. Scott Fitzgerald's character development that could inform the development of our own characters? What could we take from Kurt Vonnegut's illumination of the possibilities of narrative structure? What other authors and literary works were guiding our choices as writers? Students often said things like, "I want my dialogue to sound real," or "I want her to love this character," or, simply, "I like this part." We worked together through critique protocols to understand the specifics of what we saw in these books, and how we could apply these principles in our own original work. Importantly, not one of my students wanted to let down the second grader who looked up to them, whom they sat on the carpet and read with twice a week.

Six weeks into this project, each student had an original manuscript that had been drafted, critiqued, and revised, and everyone could speak

thoughtfully about the authors, literature, and literary techniques that had influenced their writing. We did layout and design work in class, striving to meet publishing industry standards and we published through an online, on-demand service. The shortest book was just under thirty pages. The longest was over 160 pages. Nearly every one was published professionally, although some chose to hand bind one-of-a-kind artwork as their covers. Importantly, each book was created for an individual reading buddy and aligned to that second grader's interests and reading level. Nearly all are currently for sale on Amazon.com, and have been purchased in our community (Search "High Tech High Media Arts" on Amazon).

At the end of the project, we went to our second grade buddies' classrooms while they were in another part of their school. Each of my students clutched their novels, careful to not bend the pages. When our buddies returned, we yelled "surprise!" and gave every second grade student a gift of an original book, written just for him or her. Many didn't initially realize that we created the books—everything looked so professional. At first, they thought we bought these books for them. My students had to point at their names on the covers and their buddies' names in the dedication of each book.

I share this story because it illustrates my belief that every classroom should be a space to make things, and that all students and all teachers should have access to the transformative and deeper learning experiences that "making" provides.

Bring Hands and Minds Together for All Students

As exciting as makerspaces may be, they are fraught with politics and equity issues—budgets must be allocated, equipment ordered, perhaps even new construction undertaken. The decision to purchase tools and place them in a specific location needs to be understood as a pedagogical choice. When schools centralize resources, they can purchase bigger or better tools. However, when the tools are centralized in one part of the school or in one room, that can limit who uses them. In addition, a dedicated makerspace can send the message that this space is for making, and other spaces are for something else, which in the past has been often disconnected, abstract work labelled as "academic."

I also believe that maker spaces can be amazing. They can redefine the nature of the classroom. They are multi-age, multi-purpose rooms in a time when it seems that students are perpetually coming and going from one form of standardization to another. Maker spaces offer the opportunity for students and teachers to learn side-by-side and collaborate in heterogeneous groups. And, yet, maker spaces make me nervous, for what seem to be other pedagogical, political and economic decisions that they reveal.

In high schools and universities across America, some disciplines are dominated by one gender. Engineering classes are overwhelmingly male; nursing and education are predominantly female. We have a significantly lower percentage of female computer science majors in college today than we did in the 1980s (37% of computer science majors were female in 1984; last year it was more like 18%). I am unconvinced that centralizing resources in dedicated spaces will address those problems. We need to ensure that all students have access to all of the resources they need, and that all are encouraged to follow their passions and to take risks to try new things.

To make something, a student has to use the right tools for the job, whether they are the traditional tools of the woodshop or tools like cameras, MIDI software, desktop publishing suites, vinyl cutters, 3D printers, sewing machines, microscopes, cameras and more. Whether they are developing prototypes for inventions, writing and recording songs, building a greenhouse, or writing and producing a play, all students and teachers need tools to be readily accessible to facilitate their production. I remember being a student and only being able to work on a computer when our teacher scheduled time in the computer lab; I hope that today's students do not only get the chance to take abstract knowledge and bring it to life if the teacher can schedule time in a stand-alone maker space.

The placement of these tools and the creation of these spaces in the school matters in how and when they are used, and by whom. The decision to purchase specific tools and place them in a specific location needs to be understood as a pedagogical choice. This challenge has always existed at schools and is now manifested in a new way: how do we to make decisions around people and their talents? I worry about the temptation to solve this problem with technology instead

of humanity: how does a school leader best encourage all students to achieve at their highest levels?

Regardless of what teachers hope to teach and what students hope (and need) to learn, there's a tool that can make it better and more accessible to all. We need to know what those tools are, and ensure every student can access them.

As ambivalent as I am about makerspaces, I appreciate that they have thrust a challenge in front of us. This is an opportunity to reflect on the nature of the technological age. We must ask, when did making things become a capital letter word—when did it become new and cool to be a "Maker"? And, how can we get to the point where all students and all teachers create things in every class? Every classroom should be a maker space, because designing and creating new things is part of what makes us human.

Note: A version of this article was recently published on the Education Week "Learning Deeply" blog. You can find it at http://blogs.edweek.org/edweek/learning_deeply/2015/11/every_classroom_should_be_a_maker_space.html

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John Paull, a long-time educator, naturalist, and writer, started his teaching career during the Open Education Era in England. Later he created and ran a University of Colorado alternative teacher credentialing program. He currently collaborates with the Denver public schools, offering 'I'm a Scientist' hands-on workshops for teachers, students and parents. A former teacher of children and teacher of teachers, John's latest book, 'Through my eyes: on becoming a teacher', describes how he learned to motivate and engage his students by bringing the delights and mysteries of the outdoors in.

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