Integrating School Makerspaces into the English Language Arts Curriculum

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Abstract

School Makerspaces have shown great potential to foster powerful learning outcomes for students, including the enhancement of creative problem-solving abilities, the nurturing of "soft skills" such as grit and leadership, as well as deep STEAM knowledge development. Within the school context, however, little attention has been given to how Makerspaces can promote social activism. Students hold passionate views on issues, such as homelessness, e-cigarette smoking, domestic violence, plastic pollution, and street harassment. How can Makerspaces provide an environment that promotes personal learning and self-expression so that these passions take form as social activism?

This practitioner perspective details the implementation of a Social Action-Themed Makerspace within a New York City middle school. The author, the school's Makerspace coordinator, outlines the pedagogical practices used to promote personalized learning, namely the presentation and framing of social issues to students, the centrality of personal choice, the curation of resources to facilitate research, and the freedom of access to tools and materials for product creation. Student learning outcomes are presented, including student-produced documentaries, songs, craftwork, and art pieces. The article concludes with practical challenges for School Makerspace coordinators, as well as future directions that may increase the impact of such spaces.

INTRODUCTION

School Makerspaces are often thought of as stand-alone entities geared toward sparking enthusiasm for STEM (Science, Technology, Engineering, and Math) (Bevan, 2015). Using high-tech machinery and engaging in imaginative crafting, students may develop a love of learning and a "Maker mindset," allowing them to build awesome creations and creatively solve real-world problems (Blikstein, 2013; Carroll, 2010; Facer, 2011). While there are notable exceptions (e.g., Buchholz et al., 2014; Gomez et al., 2014; Norris, 2014), "social justice" and "activism" are not typically associated with School Makerspaces.

Meanwhile, within middle school English Language Arts (ELA) classrooms, issues of "social justice" and "activism" can readily be seen in the pedagogical practices and curricular choices made by teachers (Dover, 2015). These approaches are supported by the National Council of Teachers of English (NCTE, 2012a) whose standards for secondary teachers of ELA include "literacy instruction that promotes social justice and critical engagement with complex issues related to maintaining a diverse, inclusive, equitable society" (p. 2).

However, despite the NCTE's guidance that students should utilize "a variety of technological and informational resources…to gather and synthesize information and to create and communicate knowledge" (NCTE, 2012b), the forms by which students show their understanding and practice self-expression and activism in the ELA classroom typically do not match the "multimodal literacy" practices available in Makerspaces. Multimodal literacy describes the process of meaning making whereby students read and write using both print-based and multimedia text (Walsh, 2010). Multimodal literacy practices used in School Makerspaces such as music composition, filmmaking, and graphic novel creation can lead students down rewarding personal learning paths. Yet, without the rigor and scaffolding present in the ELA classroom, such paths may not lead to academic achievement and a deeper, more nuanced understanding of issues informing their Making.

This article describes how a School Makerspace can be structured to facilitate both personal

learning and justice-oriented pursuits in the ELA classroom. Through a partnership between our Makerspace Coordinator (the author) and the seventh-grade ELA teacher, we sought to expand modes of expression within mandated curriculum in order to promote authentic student voices. Students engaged in inclusive Making through critical literacy activities as well as the writing of multimodal personal narratives.

Social justice pedagogy anchored the work featured here. Using a Critical Pedagogy (Freire, 1970), students analyzed and generated texts that represented the struggles that they and other people of color face – especially those of low-socioeconomic status. They were provided with a variety of Maker tools and practices to create personal learning paths to arrive at their preferred form of self-expression and learning outcomes aligned with Common Core standards.

Context

The importance of equity, justice, and activism has always been foundational to The Island School within which this case takes place. It is an elementary and middle school located on the Lower East Side of Manhattan with approximately 400 students equally divided between Black and Latino. Its families are disproportionately affected by trauma including homelessness, drug abuse, and domestic violence. Here, nearly half the students are homeless (Harris, 2016), with many arriving from nearby homeless and domestic violence shelters.

As a school practicing the Community School Model (Oakes et al., 2017), it offers a robust set of "wrap around" services to provide equitable educational, health, and career services. These include adult GED classes, weekend student enrichment, legal services, washing machines, and in-house vision/dental services (Kirp, 2019). Families who transition from temporary to permanent housing in other parts of the city or other boroughs often choose to continue at The Island School – one sign of the success of its Community School Model.

The Tech Café: Justice Oriented Pursuits

The principals of equity, justice, and activism within our Community School translate to important work being done by students in our School Makerspace: The Tech Café (see Lahana, 2016; 2018). Teaching and learning in the *Social Action*-themed Makerspace is based on critical pedagogy (Freire, 1970). Critical pedagogy seeks to create a more just world by exploring with underprivileged students the ways in which dominant cultures oppress others socially, politically, and economically (Duncan-Andrade & Morrell, 2008; Kincheloe, 2004; Smyth, 2011). As critical pedagogues within this School Makerspace, we provide the resources for low socio-economic status students to deepen their understanding of issues and amplify their voice. This is done through direct instruction on social issues and through the use of low- and high-technology tools for critical thinking and creative expression related to these issues. In this way, our students gain skills and experiences less common to schools serving poor and/or marginalized communities. Staff consists not only of myself – the Makerspace Coordinator – but paraprofessionals, community volunteers, and interns.

On any given day, visitors witness students from the same class working on vastly different projects: two students drilling artistic designs with screws onto canvases to create tactile art for the visually impaired; three students recording a song containing dueling perspectives about transgender-rights; a group of students embroidering messages about body positivity; and half a dozen students on Techbrarian doing research. Each student is on their own personal learning path – initiated through teacher-student conferencing – that is deepened through curated research sources on my site and maintained through a constant circulation of staff during class time.

Projects have included a cigarette-smoke detecting shirt that cautioned smokers by highlighting the words "stinky breath," "yellow teeth," and "lung cancer" when triggered; *The L.E.S.* (Lower East Side) *Bug Stand*: a student-run edible insect stand meant to promote the practice of entomophagy for animal rights and climate justice; *Rings and Wallets for the Homeless*: a project where students gifted hand-crafted rings and wallets containing money from fundraisers to the homeless in their neighborhood; and a student documentary on islamophobia called "The Hijab Experience" in which classmates try on hijabs to combat prejudice. Put together, these projects told the story of students embarking on passion-based, innovative, and justice-oriented pursuits. The result of such pursuits indicated that students now saw themselves as agents of change

concerning issues that directly affected their local and global communities.

On reflecting about the motivation and impact of her *Rings and Wallets for the Homeless* project, eighth-grader Meera reported:

> I feel so touched by the issue. Because, when we were giving the stuff out, one of the guys said, "finally, somebody really cares about the homeless." Then, me and Maddie were about to cry when he said that. (Lahana, 2016, p. 142)

Eighth-grader Sid, a member of the L.E.S. Bug Stand, revealed his personal learning and the socioemotional growth he experienced researching and running the stand:

> I want to solve global warming because cows take a lot of space, take a lot of water… which we're one day gonna run out of. I see a lot of people like me who's eating them, eating bugs…so I really don't care what others say because it's not them who's changing the world. (Ibid., p. 155)

The Makerspace provides a space where students themselves are practicing social activism by creating projects to make a positive impact on their world. For many students such activism takes the form of directly interfacing with the outside community – as illustrated by the aforementioned projects. For other students, social activism takes the form of sharing their struggles with depression, homelessness, and domestic violence. This activism is grounded in their knowledge that a real-world audience will engage with their products and be positively impacted by their messages.

Towards this end, students share their products on our school's social media feeds, at neighborhood galleries, community marches, our online shop, and on audio/video channels. Jenkins (2006) notes that the cultural competencies and skills associated with membership in this "participatory culture" are disproportionately taught in schools serving high socioeconomic status students and labels it "The Participation Gap" (pp. 4-12). Thus, the creation and sharing of these artifacts serves a dual purpose: students themselves are advocating for a more just world and are receiving equitable access to the Maker and multimodal literacy skills (Walsh, 2010), necessary for college and career readiness.

Framework

Balancing Standards-based Instruction and Social Justice Pursuits

School Makerspaces differ from traditional Makerspaces in that they reside within a larger ecosystem that aims to promote traditional academic achievement. To this end, core subject areas must address Common Core Standards and students are beholden to standards-based assessments. Meeting such standards is sometimes perceived to be at odds with justice-oriented pursuits. Dover (2015) notes "… despite the rhetoric of equity embedded in the Common Core State Standards, emphasis on standardization and high-stakes assessments can undermine teachers' efforts to center issues of social justice in their classroom" (p. 517).

Albeit challenging, pursuing justice-oriented outcomes while teaching standards-based subject areas is an essential goal of successful middle schools. Bishop and Harrison (2020) explain that addressing these "external expectations" should be done alongside inviting students to consider "matters of personal, social, moral, and ethical significance, while offering them opportunities to pose and answer questions that are important to them" (p. 27). It is with these goals in mind that the resources and approach of The Tech Café were leveraged in order to amplify the seventh-grade English Language Arts Curriculum.

Personal Learning as Anchor for Social Action Pedagogy

In many ways, The Tech Café embodies the principles of personal learning. That is, the space provides a flexible learning environment that seeks to establish a personal learning path for each student. These paths are based on students' preferred modes of learning and expression. Students can choose from a variety of tools and materials to work with, including podcasting, robotics, filmmaking, jewelry crafting, woodwork, claywork, game design, and music making. Likewise, they are given the choice of themes, ranging from (but not limited to) homelessness and domestic violence to plastic pollution and animal abuse. Indeed, such permutations of tool/material and theme selection are at the heart of each students' personal learning path.

Personal learning is also manifested in our Makerspace through teacher-student collaboration on roadmaps for content mastery (Bishop et al., 2017; Rickabaugh, 2016). To gauge mastery, students are given a variety of formative and summative assessments aligned with their co-created trajectory. These include students maintaining an idea journal, several self-assessment rubrics, student-teacher conferencing, and class presentations of their projects throughout development.

Most importantly, personal learning is seen in The Tech Café through the focus on student's personal and cultural identities – a fundamental principle when teaching for social justice (Dover, 2015). Nearly every student product generated derives from inroads into a personal experience within and/or outside of school that directly informs their work. Indeed, an ever-present mantra heard within The Tech Café is some variation of, "yeah, but why do *you* care about this issue?" and "so what does that have to do with *your* life here on The Lower East Side?"

Yet, the ways in which personal learning occurs in The Tech Café is not emblematic of how it is implemented in schools across the US. Personalization in schools often becomes "subsumed" by the educational establishment in ways that perpetuate traditional teacher-centered instruction and institutional racism (Bishop et al., 2017). In the words of Halverson et al. (2015):

> Schools have a well-deserved reputation for overlooking student interest and building routines that require learners to comply with the program provided by the school. The ability of students to express their interests, much less the ability to act upon interests, evaporates in many school environments. Many schools lock down student choice into routines, fearing the chaos or disengagement that may ensue when students are left to make their own choices. (p. 4)

For this reason, Bishop et al. (2017) assert an important distinction between *personalized* learning and *personal* learning. The former is characterized by a controlled set of student choices leading to a limited range of learning outcomes. The latter allows for authentic student choice and is driven by student interest and relevance beyond school walls. As school systems have rapidly moved toward standards-based and exam-driven pedagogies, opening up curriculum to allow for authentic choice has become increasingly challenging (Milner, 2013). Bishop and Harrison (2020) further emphasize this point, contending that, "Prescribed curriculum often focuses on finding answers to questions young adolescents never ask" (p. 30).

This is particularly the case when it comes to technology-enabled personalized learning in schools. Students are often given the illusion of choice when using educational technology, but are in reality assigned closed-ended activities such as cognitive tutoring, simple memorization, and word processing (Barron et al., 2010; Gee, 2014; Gomez, 2014; Rickabaugh, 2016). Hence, Patrick et al. (2013) assert that personalization cannot occur in competency-based learning environments where only a single resource, pathway, or modality exists to meet a given standard (p. 31).

This contrasts with the use of technology in The Tech Café, where technology enables multiple modes for expressing research-based inquiry and amplifies student voices for the purposes of social activism. Therefore, I will adopt the term *personal* learning as opposed to personal*ized* learning to emphasize the centrality of student agency within The Tech Café.

Teaching for Social Justice

Carlisle et al. (2006) define social justice education to be the blending of content and process to "enhance equity across multiple social identity groups…foster critical perspectives, and promote social activism" (p. 57). Similarly, Bishop and Harrison (2020) promote an integrative approach within middle schools, calling for the organization of curriculum so that students can pursue questions they have about themselves and their communities. Within this approach, students gain not only academic proficiencies and critical awareness, but proficiencies needed to enact change. Dover (2009) outlines the necessity to teach for social justice as well, indicating three components: curriculum, pedagogy, and social action. Within these components, Dover emphasizes the importance of K-12 core content integration as well as explicit instruction on inequities experienced by students. Through helping students to "critique, mitigate, and redress inequitable conditions," educators foster increased agency and social activism (p. 514).

Within The Tech Café there is a conscious effort to think of our work with students as "amplifying" their voice rather than "empowering" or "giving" them a voice. The latter notions pre-suppose that students do not already arrive possessing strong opinions on the oppressions that they face. In the words of bell hooks (1989), "Certainly for Black women, our struggle has not been to emerge from silence to speech but to change the nature and direction of our speech. To make a speech that compels listeners, one that is heard" (p. 6). Thus, technology is used in our Makerspace as a means for deeper explorations into the root causes and effects of issues that are important to them. With that deeper understanding they then use technology to construct compelling products that bring about positive change in their world.

School Makerspaces

School Makerspaces are seen by many to be at the vanguard of school reform. Given their ability to democratize knowledge and invention (Blikstein, 2013; Facer, 2011), encourage creative problem solving (Carroll, 2010), invigorate STEAM (science, technology, engineering, art, and math) curricula (Erete et al., 2015), build equity and diversity (Barton & Tan, 2017; Vossoughi et al., 2016), promote peer-to-peer teaching (Sheridan et al., 2014), and generate passion-based learning (Chu et al., 2017), it is fair to say that the impact of school Makerspaces has been wide-ranging.

Yet, Vossoughi et al. (2016) note that Maker Culture frequently re-enforces repressive cultural representations. Makers are often seen as White middle-class males who utilize expensive kits and digital fabrication devices to produce electronic, mechanical, and artistic wonders. Within this cultural framework, practices by dominant groups are legitimized, while marginalized groups with long histories of "mending, repairing, teaching, and caregiving" are discounted or ignored (p. 212). Ironically, students within these marginalized groups are then "introduced" to Making in order to *empower* them – thus reinforcing established patterns of "(dis)empowerment and (dis)advantage" (Godhe, 2019, p. 323). Therefore, as educators, we must practice "critical analyses of educational injustice, historicized approach to making as cross-cultural activity, explicit attention to pedagogical philosophies and practices, and ongoing inquiry into sociopolitical values and purpose of making" (Vossoughi et al., 2016, p. 215). Part and parcel to this approach is honoring and drawing upon students' diverse cultural approaches already taking place in their households and within their communities. Calabrese et al. (2018) reached similar conclusions on the importance of inclusive Making in their longitudinal study of 41 youths of color from low-income families. They found such work opened up the opportunity for youth to imbue their making with rich culture, while also "highlighting the historicized injustices they experience in the world and the symbolic and physical violence they sometimes experience as a result" (p. 779).

Integrating School Makerspaces

In The Tech Café, students typically self-select a social issue that is meaningful to them. Once sufficiently researched, they use whatever tools and materials they believe will help raise awareness of the issue and work toward solutions (Lahana, 2018). This multimodal approach differs in many ways from what occurs in typical ELA classrooms, where student choice is minimized and expressions of understanding are often limited to expository and narrative text or short answers (Gee, 2004). This is particularly the case in schools serving low socio-economic status students where a complex nexus of factors converge to create classroom experiences dominated by remedial exercises rather than engaging multimodal learning activities (Callow & Orlando, 2015).

In contrast, students in The Tech Café represent their understanding and ideas through combinations of music, electronics, jewelry crafting, painting, sewing, coding, and filmmaking. Marsh et al. (2018) refer to such "meaning making" as *Maker literacies*, which include the critical design, production, interpretation, and dissemination of artifacts, created through hacking, tinkering, and making (pp. 4-5). For this collaboration, students are expected to adapt the Maker literacies to marshal them for pure social activism and use them to create multimodal texts in service of their ELA curriculum.

Such a collaboration may serve as a useful contribution to the literature on School Makerspaces, as they have yet to make widespread progress in their integration into core subject areas. With some notable exceptions (see Barton & Tan, 2009; Chu et al.,

2017; Tofel-Grehl et al., 2017), direct collaboration between Makerspace coordinators and classroom teachers has thus far been minimally documented in the literature. To this point, Godhe et al. note that little evidence exists that Maker education as a whole has been widely diffused across subject areas. Rather, it is "champion lead" by individual teachers practicing within their localized domain, as opposed to an initiative resulting from "sustained planning and leadership" (p. 318).

Where occurring, the driver of Making in classrooms rarely originates from mandated content in a given subject area. In cities such as New York City and Los Angeles, for example, Common Core-aligned curricula for English language arts (ELA), mathematics, social studies, and science clearly articulate the scope and sequence of content to be taught (Common Core State Standards Initiative, 2010; Lost Angeles Unified School District (LAUSD), 2008). Teachers are mandated to address such content in their daily lessons, with a great many structural measures in place to ensure accountability (Berryhill et al., 2009). Makerspace curricula often cast aside these requirements, electing instead for highly engaging STEAM-related content (Fasso & Knight, 2019).

In this way, Godhe et al. (2019) explain, a "tension" arises when learning outcomes and curricular goals are associated with Making. Issues such as assessment, performance, and achievement do not always seamlessly align with the activities and ethos present in School Makerspaces. However, without such alignment, Makerspaces run the risk of becoming yet another new technology trend "only partially adopted in schools, resulting in inconsistent outcomes and problematic 'side effects'" (p. 324). Therefore, to reach full integration in schools, with widespread dissemination and full utility within a standards-based educational structure, school Makerspaces must shift their focus to directly addressing the mandated curricula in core subject areas.

To do so requires collaboration between Makerspace coordinators and the science, ELA, math, and social studies teachers. This is no small feat, as entrenched teaching habits, scheduling, and other logistics must be negotiated for successful implementation (Hira et al., 2014). Administration "buy-in" is also essential, as this is likely a key factor for both funding and flexibility with respect to alternative forms of knowledge gathering and expression (Fleming, 2015).

The Case

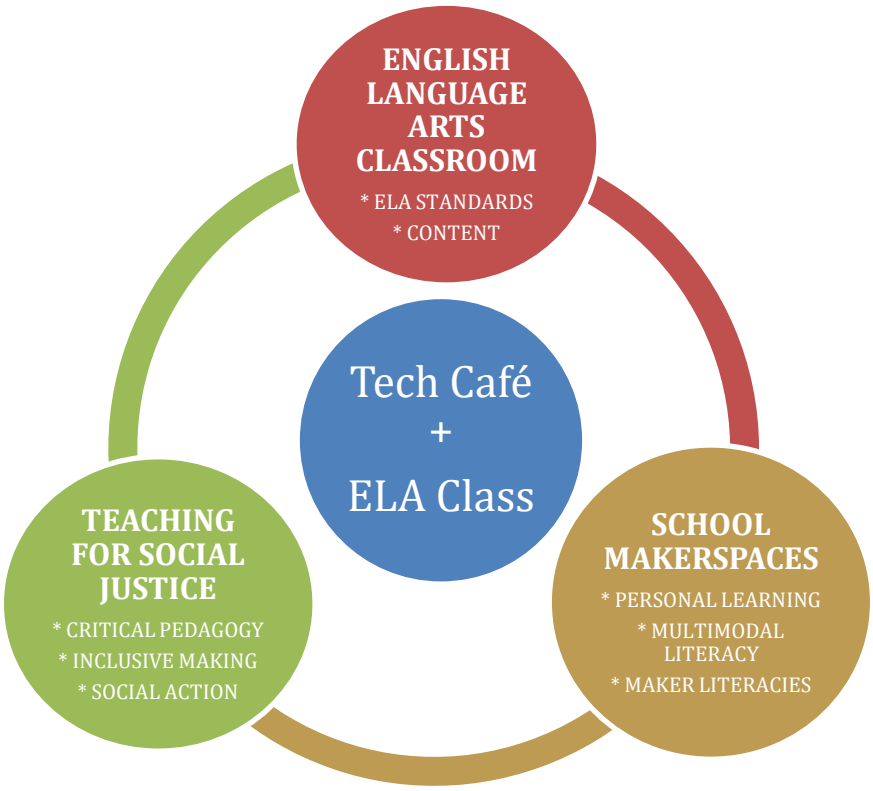
Context for the Collaboration

The Tech Café, which has been referred to as "a school within a school" by staff members, operated separate and apart from the school's curriculum. 2018 marked the first year that I worked directly with teachers to amplify and extend their mandated curricula. My primary collaboration was with the seventh and eighth-grade ELA teachers. Our principal, a proponent of Project-Based Learning (Bell, 2010; Blumenfeld et al., 1991), was instrumental in helping to envision such a collaboration. She scheduled regular meeting times during our school's weekly hour-long professional development. In the beginning, these periods were met by all participants with equal parts curiosity and confusion. However, by the end of the semester, there was an intrepid spirit to create ever-more engaging environments for our students to explore core subject area curricula.

The following is a snapshot of the co-planning, resultant activities, and implementation of an ELA curriculum aligned with the Teachers College Readers and Writers Workshop scope and sequence (Calkins, 2014). It took place over a single semester with our seventh-grade ELA teacher, Mr. Farley. The class met once a week for 10 weeks. Each of these 10 sessions lasted approximately 1 hour and 45 minutes (two consecutive periods). The class contained 22 students, a majority of which possessed individualized education plans (IEPs). Mr. Farley was selected as my collaborator by our principal due to his track record of progressive teaching methodology, including the infusion of drama and project-based learning into the classroom. The case is organized into two parts: an account of the collaborative planning and what occurred during each of the 10 sessions.

Figure 1

Tech Café + ELA Framework



Implementation

Sessions 1–3: Collaborative Planning: Meetings with our seventh-grade teacher, Mr. Farley, took place within our school's "Social Action" themed Makerspace, The Tech Café. Mr. Farley's class was working with the novel *A Long Walk to Water* by Linda Sue Park (2010), which tells two Sudanese stories – one dealing with a boy's struggle while escaping 1980s war-torn Sudan, and the other of a girl's life in a water-starved village. Working within the Teachers College Writing Workshop curriculum, Mr. Farley was helping students to craft personal narratives.

Our initial discussion revolved around Mr. Farley's concern that students did not believe they had interesting stories to tell about their lives. Mr. Farley noted that everyone has had remarkable long-term experiences that have affected their life's path. So too, they have had what Teachers College calls "small moments" that, written well, can capture an audience and provide a window into their lives. However, both of us acknowledged that students might struggle with whether to reveal narratives infused with the trauma associated with poverty, domestic violence, and drug abuse that many have experienced.

Our discussion led to the idea that The Tech Café might provide alternate modes of expression for our reluctant writers to express their stories, including music creation, animation, and filmmaking. By giving them choices with their modes of communication, students could enlist the tools and materials in high-strength and high-interest areas ignited by prior experiences within the Makerspace.

I asked Mr. Farley to bring out the standards he used to assess student work. As he walked me through the rubric for Teachers College Reading and Writing Project Units of Study in Argument, Information, and Narrative Writing (Calkins, 2014), I brought up the idea that the rubric would best suit our needs if we adapted it to

include multimodal expression, rather than just traditionally written text. We then located the language that could best be adapted to include other forms of expression and eliminated rubric categories ill-suited for Maker literacies (e.g., punctuation and sentence structure) (see Figure 2).

Figure 2

Adapted Rubric for Assessing Multimodal Narrative Writing

ELA & MAKERSPACE COLLABORATION: PERSONAL NARRATIVE RUBRIC*

	1 Point	2 Points	3 Points	4 Points	Score
Overall	My narrative described a special moment in my life	...and had a problem or struggle that got solved	...and the characters were realistic (3D)	...and there was an important lesson that was learned.	
Lead	My beginning showed *what* was happening and *where*	...and introduced a problem or struggle	...and showed viewers key character traits that might be important later	...and showed viewers that while this was a special moment, the characters have a history and the problem or struggle didn't just start with this story.	
Transitions	My narrative had more than one time period	...and it showed time passing in interesting ways. For example: *meanwhile, at the same time, early that morning, three hours later*	...and time changed in interesting ways to change the mood. For example: *suddenly, unlike before, if only she had known*	...and connected *what* happened to *why* it happened. For example: *If he hadn't . . . he might not have, because of, although, little did she know that.*	
Ending	I wrote an ending that connected to the main part of the story	...and showed an insight that changed the main character	...and had inner thinking, dialogue, or small actions to show how the character changed	...and the story ended in a way that connected back to the main lesson of the story.	
Craft	I slowed down the heart of the story and made less important parts shorter. I used figurative language to help the viewer picture the characters, settings, and events	...and used objects or actions as a way to understand the characters better. For example, *beat up sneakers* might symbolize someone is poor or isn't concerned about their appearance.	...and developed relationships between characters to show *why* they acted or spoke as they did. Each character spoke in their own unique way	...and helped the viewer know the mood by including specific details and figurative language. For example, the clouds were grey and churning.	

*Adapted from Narrative Teaching Rubrics, Teachers College Reading and Writing Project

SCORES: **1-5**= So So **6-8**= Pretty Good **9-12**= You've Got skills! **13-16**= Wow, Completely Blown Away.

I set about collecting exemplary media that showed multimodal personal narratives with a special eye for those matching circumstances similar to those of our students and meeting the standards of our adapted rubric. Using a dedicated section on my website Techbrarian.com, I posted documentaries from *Reel Works Teen Filmmaking* and an animation from *Storybooth*, a popular digital platform that transforms selected teen stories into animations (see Figure 3).

These personal narratives told stories of crack-addicted parents, domestic abuse leading to homelessness, incarceration, and depression. Of equal import, each narrative acted as a 'mentor text' that shared themes of liberation, resilience, and the power of creative expression. Indeed, for this collaboration to be imbued with social justice, students needed to see their own culture reflected in these projects and witness "Inclusive Making" (Vossoughi et al., 2016).

In addition to products created by outside youth, this webpage featured several songs and a written narrative created by students at The Island School. In the past, I have found that using student products as exemplars created a positive feedback loop whereby students are inspired to create more products to add to the pool of inspirational works (see Figure 4). The site also included a detailed tutorial on how to create web-based digital animation and storyboards (graphic novels).

Ordinarily, in The Tech Café, students engage in a mini-lesson at the start of each session. During this time, I use my open access journal to dive deeply into a social issue using a variety of media, discussion questions, journal prompts, and/or hands-on activities. For example, when discussing the Meat and Dairy industry, students might watch a PETA (People for the Ethical Treatment of Animals) investigative video, sample a plant-based hamburger, and view examples of animal cruelty protest posters.

Figure 3

Screenshots of Techbrarian.Com Personal Narrative Entry Assignment

For our first week of ELA in the Makerspace we're talking about YOU- yes you. Whether you believe it or not, each of you has an incredibly powerful story inside of you (probably more than one). No one's life is boring.

We all struggle with family drama, have weird issues with friends, and do random stuff that we regret. We all have secrets that we hold inside, gross memories, and times we laughed so hard our bellies hurt. We have all loved deeply and cried when we lost something important. Yep, each of you has a story.

So, you might be wondering *what does this have to do with Social Action?* Well, think about it this way: have you ever felt like no one has understood what you are going through– felt alone in your struggle? When you tell your story, you are offering up the chance for a bunch of people to relate and not feel so alone. That is Social Action! Of course, your story doesn't have to be serious, just super personal and have a lot of details. Let's check a few out:

If you are interested in filmmaking, begin by making a storyboard for each scene in the movie. Show it to me and borrow a camera to get started!

Figure 4

Alize's Song: Ain't Too Proud, Used as Inspiration by a Former Eighth Grader

Upon completion of the mini-lesson, students return to work on projects pertaining to a self-selected issue chosen earlier, or embark on a new project having to do with the Meat and Dairy industry.

They are given open access to cases and cabinets filled with items such as drills and scroll saws, embroidery hoops and floss, paint and canvases, microphones and cameras, and laptops. Along with volunteers, paraprofessionals, and co-teachers, I circulate around to help students deepen the connection between what they are making and the social issue they are trying to solve. Strategies include encouraging them to check out the research resources section on my website, conversations about their experiences with the issue or reactions to the mini lesson, and bringing into the discussion other students within the Makerspace to offer their perspectives.

Session 1: In line with this approach, Session 1 began with the class being escorted to the front of the room for a mini-lesson. I noticed that Mr. Farley did not come to the front to co-teach and instead stood at a distance. I think this stance spoke of not only his unfamiliarity with the tools, materials, and pedagogical approach used in our Makerspace, but also of my inexperience in collaborating with core subject area teachers. Rather than harnessing his knowledge of English Language Arts, I had simply taken control and created the lesson based on our brief discussion of personal narratives.

I explained to the students the nature of the collaboration between our Makerspace and their ELA class: we would be working together once a week using all the tools and materials with which they had become familiar. However, our focus would be a deeper exploration of the literature and ideas discussed in Mr. Farley's class as well as their own personal stories.

Next, we handed out our adapted narrative writing rubric. As students scanned the rubric, they were told that, as part of this collaboration, they would be using a tool of their choice to create their personal narrative. These included animation, claymation, songs, podcasts, or game design. However, just like writing with paper and pen as their tools, the narratives they created using low- and high-tech would be judged according to this rubric. Students would have six sessions (approximately six weeks) to complete their work.

With that, we opened the Techbrarian website and began our discussion of personal narratives. The students were receptive to the idea that they did, in fact, have interesting stories to tell. This notion was reinforced by the teen films, songs,

and animations shown – particularly those from students within their own school. Most notably, a current eighth grader had written a personal narrative that she allowed me to share, in which she laid bare some of the trauma she had experienced. The story was crafted with such heart and bravery that the students were transfixed and urged me to read beyond the first chapter. Finally, students were asked to go on the Techbrarian page dedicated to their ELA class and use the rubric to work on one of the examples featured on the site.

Figure 5

Excerpt of Eighth Grader's Personal Narrative

Chapter 1: How it all Started

Some people's lives seem beautiful and shining. I see kids walking down the street with smiles on their faces, holding hands with their parents. But my life, it shines, but it's not because things are easy at home. It shines because I rise above all the drama. What kind of drama you ask? I've got some stories.

Session 2*:* This *session* began with students presenting their rubric scores for one of the personal narratives we viewed in Session 1. Students' assessments primarily focused on one of the two documentaries and were overwhelmingly positive, with the vast majority rating them, "Wow, Completely Blown Away." That said, the students who contributed to the discussion were unable to justify their scores within some of the measures of the rubric – especially concerning "3D Character" development, transitions, and most elements articulated within the "craft" category. Mr. Farley briefly clarified some of the rubric's elements, but because our class time was limited, we chose to move on after a few minutes.

Next, I proceeded to tell the students a true story from my childhood about when my father brought a cow's heart to my sixth-grade classroom for "career day." Using this personal narrative, we collectively created an animation[1] with their input detailing the character design, setting, and dialogue. Students took turns developing the narrative on the Smartboard. We then repeated the process with a storyboarding application.[2]

Session 3: Mr. Farley made sure that the students brought in their personal narratives. After a brief mini-lesson reminding them how to use the animation and storyboarding applications, I quickly introduced a web-based recording application[3] that most students were familiar with. I had written a short song retelling the same "Cow's Heart"

[1] Using Powtoon: a web-based video and animation application

[2] StoryBoardThat

[3] Soundtrap

incident used for the animation and storyboard. I read them the lyrics of the song and then recorded the first verse using the application. Along with the recorded lyrics I showed them how to add a musical accompaniment. The students were also reminded that they could use polymer clay to create stop-motion claymations of their personal narratives.

Once dismissed, most students were evenly divided between working on animation, claymation, and storyboarding. Three students began tinkering with the music composition interface of the recording application.

Sessions 4–5: Collaborative Planning. Prior to our fourth session, Mr. Farley and I sat for a brief meeting in which he spoke of the need for the students to move beyond two-dimensional (2D) characters in their narratives. To create three-dimensional (3D) characters, Farley noted it was important to establish what Calkins (2014) called a consistent point of view informed by an internal story (pp. 2-9). In both their appearance and actions, characters should have distinguishing quirks or flaws to move from generic to complicated (p. 32). The need for a deeper understanding of 3D characterization was evident earlier on when students evaluated the documentaries using the narrative rubric. To facilitate student understanding of 2D versus 3D characters, I created a chart on the dedicated webpage.

Figure 6

Journal Screenshot—Moving Characters From 2D to 3D.

-WEEK 3-

This week we'll be talking about how to change your personal narrative from 2D (flat) to 3D. There are two ways to think about this:

1. Changing a character in your writing from 2D to 3D.

2D Characters	3D Characters
Perfect life	Has problems that you explain
No history	Has a past that you talk about– not just what's happening at the current moment in your story.
Perfect looks	Has interesting beauty marks, pimples, hairstyle, clothes that don't perfectly match
No thoughts	A voice inside her head with different ideas and desires that don't match what they are saying.

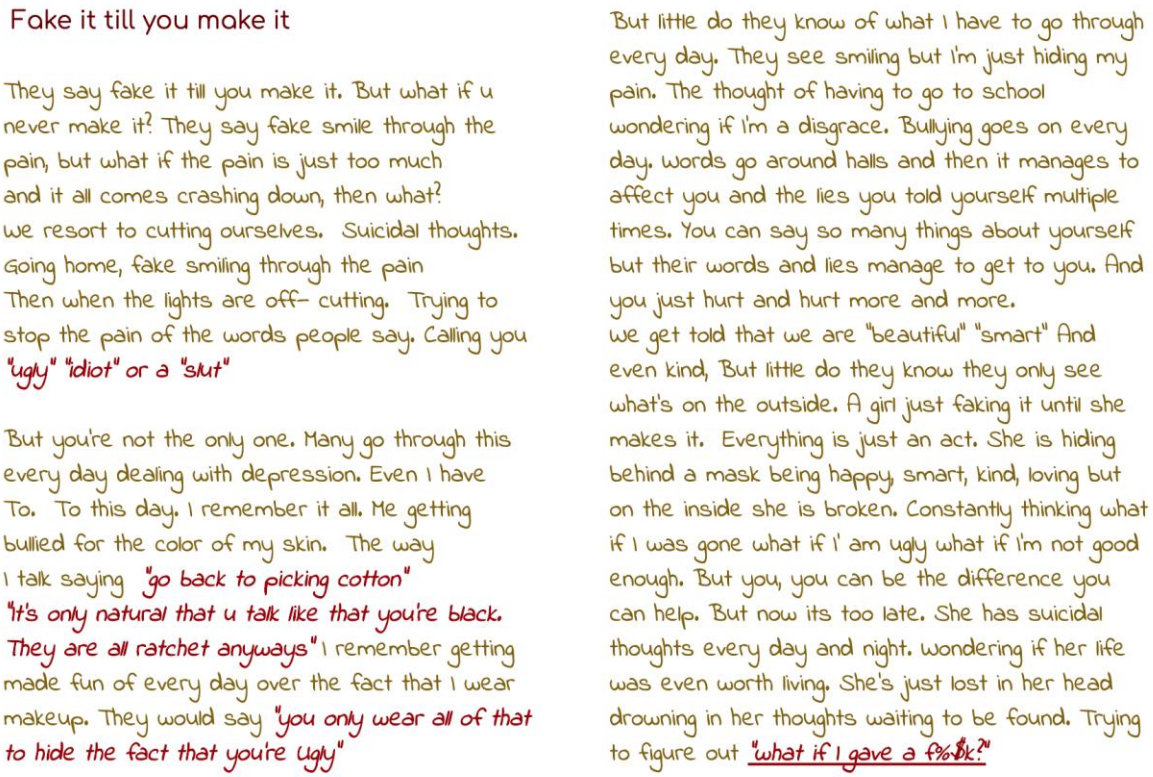
Session 4. As per our discussion, the students were introduced to the concept of 3D characters during our fourth session and encouraged to transform their narratives to include them. At this point, seventh-grade students were working in earnest creating storyboards, claymations, and songs. Interestingly, all students had abandoned the

animation software, which I had assumed would be their primary means of creating personal narratives in the Makerspace. In passing, Mr. Farley noted that their abandonment was likely due to the complexity of the program, as evidenced by their migration to the storyboarding application, which possessed a more straightforward interface.

At this point, Amani,[4] who was a proficient poet, ceramicist, and painter within the social action Makerspace, had already finished adapting her personal narrative into a spoken word poem (See Figure 7). It was a heartbreaking poem about her struggles with racism, bullying, and depression. Prior to Session 4 of our ELA and Makerspace collaboration, Amani had eagerly gone into our small recording studio in The Tech Café and recorded a poem. At the time, I had not considered how applying our rubric might change the content and structure of her poem. A few minutes before the end of the session, Mr. Farley and I sat down with Amani to listen to her poem and help her self-assess the work using the narrative rubric. We were mesmerized by the force and brutal honesty of her poetry. After expressing our admiration, Mr. Farley asked Amani to go through her poem and note what categories she could work on to help readers have an even clearer picture of who she was and who her tormentors were. He guided her to the "craft" dimension and she observed that she could add more of a description of the bullies. Mr. Farley and I also questioned her as to who her audience was. Who was she talking to when she wrote, "But you, you can be the difference. You can help. But now it's too late."? Amani shrugged, "the reader, I guess," she responded. I remarked that I loved how she was thinking about her audience and perhaps she could include more of that involvement throughout the text.

Figure 7

Amani's Personal Narrative Spoken Word Poem



Fake it till you make it

They say fake it till you make it. But what if u never make it? They say fake smile through the pain, but what if the pain is just too much and it all comes crashing down, then what? we resort to cutting ourselves. Suicidal thoughts. Going home, fake smiling through the pain Then when the lights are off– cutting. Trying to stop the pain of the words people say. Calling you "ugly" "idiot" or a "slut"

But you're not the only one. Many go through this every day dealing with depression. Even I have To. To this day. I remember it all. Me getting bullied for the color of my skin. The way I talk saying "go back to picking cotton" "It's only natural that u talk like that you're black. They are all ratchet anyways" I remember getting made fun of every day over the fact that I wear makeup. They would say "you only wear all of that to hide the fact that you're ugly"

But little do they know of what I have to go through every day. They see smiling but I'm just hiding my pain. The thought of having to go to school wondering if I'm a disgrace. Bullying goes on every day. words go around halls and then it manages to affect you and the lies you told yourself multiple times. You can say so many things about yourself but their words and lies manage to get to you. And you just hurt and hurt more and more. we get told that we are "beautiful" "smart" And even kind, But little do they know they only see what's on the outside. A girl just faking it until she makes it. Everything is just an act. She is hiding behind a mask being happy, smart, kind, loving but on the inside she is broken. Constantly thinking what if I was gone what if I' am ugly what if I'm not good enough. But you, you can be the difference you can help. But now its too late. She has suicidal thoughts every day and night. wondering if her life was even worth living. She's just lost in her head drowning in her thoughts waiting to be found. Trying to figure out "what if I gave a f%$k?"

[4] Pseudonyms used for all students.

Another student, Hilda, adapted her personal narrative into a script recreating bullying events in her life. She came to Session 3 ready to begin filming it. As with Amani, Mr. Farley and I encouraged Hilda to enhance her script by identifying items on the narrative rubric that could be used to strengthen characters' 3-D qualities, build mood, and make transitions that connect more logically to prior events. For Sessions 3 and 4, Hilda revised her personal narrative. She began filming with three other students throughout her standard social action periods. During the rest of our ELA and Makerspace collaboration she spent time editing the footage (with the help of a college intern familiar with digital editing). Thus, for Amani and Hilda, the notion that their Maker literacies could be harnessed to amplify ELA work had already come into clear focus.

Figure 8

Hilda Filming a Scene From her Personal Narrative.

During our collaborative meeting prior to our fourth class, Mr. Farley observed that the students were proceeding at wildly different paces. While some students like Amani and Hilda were flourishing within the open-ended environment, most students – especially those designated as learning disabled – were struggling to structure a completed product. Many had just one or two panels of a storyboard constructed or a few simple clay characters from their narrative that did not reflect the notion of "3D" and lacked settings for their characters.

As a result of these disparate performances, Mr. Farley and I decided to create a second rubric for product development in order to clarify expectations. The rubric sought to ground students' work with technology in quantifiable ways (e.g., "*There are at least two objects in each storyboard panel that match the narrative I am writing.*"). The students were presented with the rubric during Session 5. The demonstration included storyboard examples from prior years that we then scored as a group using the assessment. The rubric was handed out to the students and Mr. Farley and I circulated throughout the Makerspace, helping the students assess where their products currently fell along it. The rubric was considered by several students who advocated for what their score should be based on the status of their product. Other students simply shrugged off the rubric as irrelevant to their class pursuits. Put together, the rubric was only moderately successful in guiding student performance, and

it certainly would have served us better had it been presented at the start of the unit.

Figure 9

Example of ELA–Makerspace Rubric

ELA-MAKERSPACE PRODUCT RUBRIC

Sculpey + Lego: Weeks 3 and 4

☐ I Created my Character: head, body, arms, and legs	☐ My character has at least 2 things about it that make it exactly like the one in my personal narrative	☐ I Created my Lego setting with at least 4 objects that were in my story (for example, a building, a bike, or a bed)

StoryBoardThat: Weeks 3 and 4

☐ My StoryBoardThat has at least 3 Panels (squares) filled in with the character(s) and setting from my personal narrative	☐ There are at least 2 objects in each panel that match the personal narrative I am writing	☐ The character(s) in my StoryBoardThat have speech bubbles with thoughts or words in them from my personal narrative.

Figure 10

Portion of Storyboard Produced by Student

Sessions 6–8. The first half of Session 6 was designated for personal narrative presentations. All told, 19 students had completed projects: 14 storyboards, one animation, two songs, Amani's spoken word poem, and Hilda's film. Three students – one of whom was chronically absent – had underdeveloped narratives that did not meet the minimal standards set forth in either rubric. All of the completed storyboards were compiled and printed into a short graphic novel for each student. Students were asked to volunteer to read their contribution. A large number chose to do so and students' reactions were overwhelmingly positive. Next, Amani's spoken word poem was played while the words were projected. Students nodded along with the words and shook their heads at the insults recounted in the narrative. Her presentation was followed by uproarious applause. Finally, Hilda played her film. Students were genuinely impressed at the professional way in which it was scripted and edited, despite the absence of costumes or realistic props. Again, Hilda received enthusiastic applause from students.

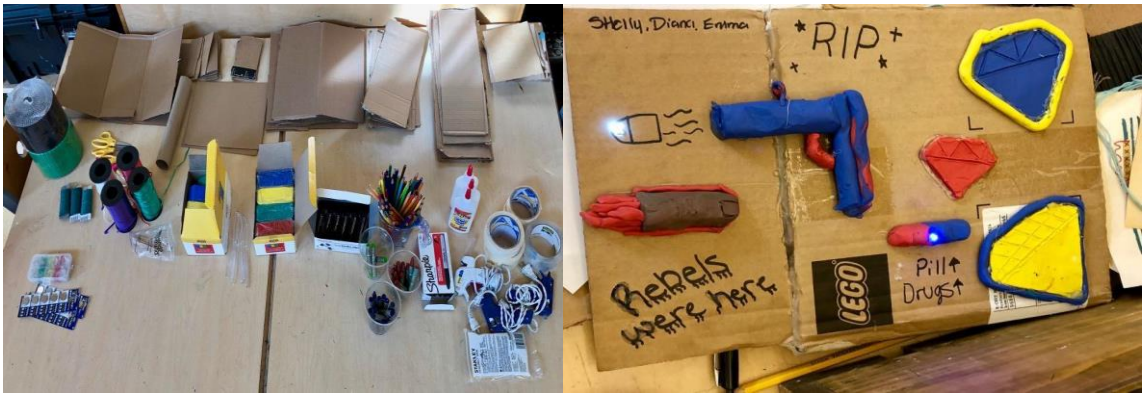
For the second half of Session 6, we moved on to another aspect of the reading and writing process – that of recognizing primary themes. Mr. Farley felt that the students often struggled with seeing "the big picture" in a given text. This was the case for both the novel, *A Long Walk to Water* and a movie they had watched called, *The Good Lie* (2014), in which Sudanese characters' journey to a refugee camp in Kenya and then to the United States.

I created a design challenge to reinforce how themes played out in the aforementioned novel and movie. The design challenge asked the students to choose from either pre-selected themes such as "sacrifice" and "rebirth" or themes they had personally generated based on the book or film. Once selected, the students were tasked with creating art projects that represented those themes. Materials included cardboard, wire, clay, LED lights, and glue guns.

Creating a concrete design challenge with a simpler set of materials, a shorter duration, and a narrower set of outcomes proved much more successful than the relatively open-ended structure of the personal narrative project. The students were able to infuse themes into art projects and explain how these themes applied to the novel and the film. Once again, not included in the planning of the design process, Mr. Farley assisted individual students in constructing their projects, but did not offer explicit group instruction connecting themes with the materials at-hand. That said, the design challenge was extremely successful, with impressive products generated by the students.

Figure 11

Materials and Product Representing Themes Within a Long Walk to Water

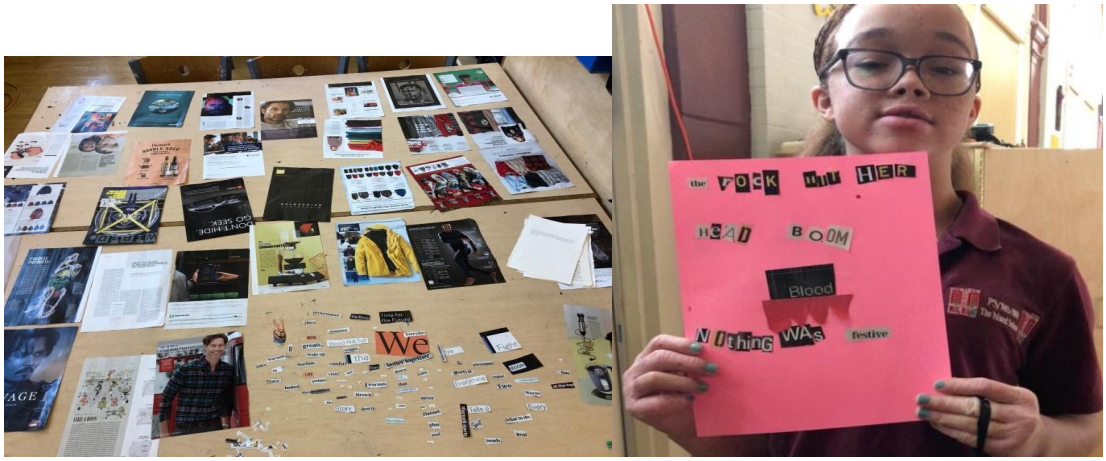


Sessions 9–11. Mr. Farley expressed enthusiasm regarding the primary themes activity and seemed energized during our subsequent meetings. Therefore, similar design challenges were undertaken by students during sessions 9 through 11 to replicate past successes. During Session 9, students were tasked with creating "found poetry" from discarded books

and magazines to represent key passages from *A Long Walk to Water*. Several generic examples of found poetry were shown to students on our webpage, as well as one I created specifically on *A Long Walk to Water*. Many students enjoyed the novelty of cutting words from books and magazines, but regardless of whether they cut out the words or used ones that were pre-cut, putting the words together to form meaningful poetry pertaining to *A Long Walk to Water* proved challenging for a majority of the students.

Figure 12

Found Poetry Setup and Example



Session 10. Session 10 consisted of students selecting a chapter from *A Long Walk to Water* and designing puppets and scenery to enact a scene. Earlier that week, students helped me build a makeshift puppet stage. Popsicle sticks and preprinted paper characters and objects were provided along with other arts and crafts materials. Students could work in teams or individually. Mr. Farley and I circulated around and helped students rehearse dialogue and synchronize their words with puppetry.

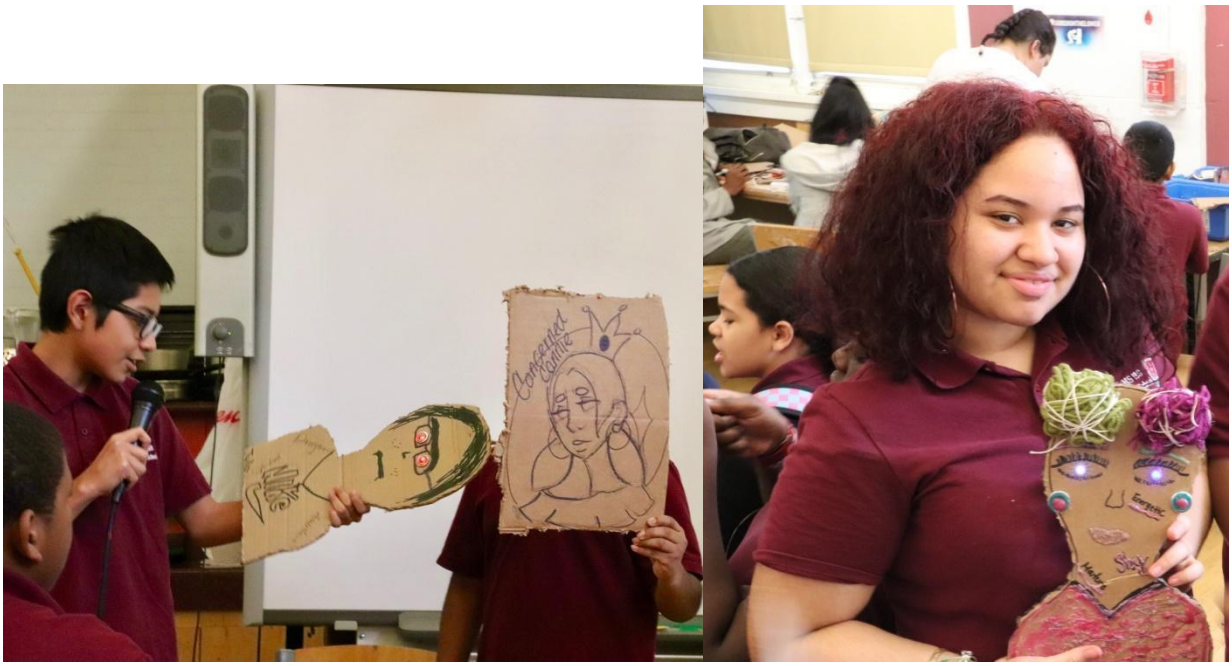
Students' craftwork, enthusiasm, and ability to perform puppetry varied, but as audience members, the class was universally supportive. I played dramatic music in the background and Mr. Farley participated wholeheartedly in several of the performances – displaying the love for drama that he often infuses into his English Language Arts lessons.

Session 11. For Session 11, students were asked to "build a character" based on at least three complex character traits. As with the found poetry activity, students seemed to appreciate having shorter timeframes for their product design and set limits to the materials to be utilized. In fact, such constraints often have a counterintuitive effect – that of increasing creativity. In the words of Austin Kleon (2012), "The way to get over creative block is to simply place some constraints on yourself. It seems contradictory, but when it comes to creative work, limitations mean freedom" (p. 137).

The students' products for this session were quite impressive and their enthusiasm in creating them was evident. The Makerspace buzzed with activity as they "built characters" to represent complex character traits. Utilizing a worksheet containing an extensive list of characteristics, students named their characters, labeled them with at least three traits, and presented them to the class. Students were also given the option to provide a backstory to their characters during their presentation. As the primary activity for our final session, building characters represented a promising end to our collaboration.

Figure 13

Students' Character Trait Projects



Reflection and Next Steps

While the relatively recent Maker movement has been a leading force in innovative educational practices, "hands-on" learning has been at the cornerstone of progressive education in the US for over a century (Knoll, 1997; Whitescarver & Cossentino, 2008). Yet, something remains distinctive in this latest incarnation – especially as it applies within the school context. Combining elements of the art studio model, shop class, home economics, and technology creates an educational synergy unlike those seen before.

Nevertheless, the challenge of determining how school Makerspaces can move beyond high-engagement STEAM-related activities and become an indispensable tool to amplify and extend the work done within core subject classes remains unresolved. While no two Makerspaces will look the same, what will be the guiding principles and practices that create widespread implementation, sustainability, and effectiveness?

Of equal importance, how can the pedagogical practices and accompanying learning environment of School Makerspaces foster inclusive Making? School Makerspaces must be purposefully designed to critically address issues of injustices faced by its students – particularly students of color and those of low-socioeconomic status. To this end, our students analyzed mentor texts by Makers from similar backgrounds and facing similar challenges. They were given the tools and mandate to create their own personal narratives. By doing so, they actively participated in the endeavor of creating a more just world – one that sees through the eyes of its talented, but unjustly treated, youth.

With these goals in mind, this case attempted to further the development of school Makerspace integration into core subject areas. My conversations with the ELA teacher led to a series of successful assignments and activities that employed Maker literacies to deepen students' understanding of how to create powerful personal narratives and analyze literature. Many of the student products illustrated an engagement with the concepts and practices that Mr. Farley wished to enhance in alignment with the Teachers College Writing Workshop curriculum. Further, they created a body of work that spoke to the struggles with bullying and racism that many students faced. The most compelling of these works were shared through our social media platforms.

Still, there were numerous gaps pertaining to collaboration, content, and pedagogy. The goal of this work was to position Makerspaces as a means to promote both personal learning and social justice in core content areas. Intrinsic to effective social activism by students is a personal connection to issues that generate a passion to learn more about it and create a change in their world. *This Maker model contrasts with students making projects generated BY teachers and FOR teachers*. With the exception of Amani's spoken word poem and Hilda's film – which were shared through our school's social media outlets – most projects lived solely to meet the demands of an assignment. Few students continued their English Language Arts work during "regular" *social action*-themed Makerspace periods and none built upon their projects following the conclusion of the unit. This is not to say that students did not gain some content area expertise as a result of creating storyboards, animations, poetry, and crafts. Rather, generating authentic personal learning and social activism through engaging with core content classes remains a work-in-progress.

Likewise, codifying the collaborative practices essential to forming a deep connection between Makerspaces and content areas continues to present a worthwhile avenue of exploration. I often designed lessons with minimal input from Mr. Farley. Very likely, had we spent more time co-planning as true partners, the activities, assessments, and justice-oriented work would have been better aligned to student needs.

This might have been achieved with more frequent visits to his classroom to further understand the content and pedagogy surrounding personal narratives. Visiting Mr. Farley's classroom would have also afforded me the opportunity to get to know students as writers of traditional text. Learning about their strengths and weaknesses could have helped me tailor Makerspace activities and interventions to positively impact their abilities to powerfully communicate their stories.

Evident by the *social action*-themed Makerspace, schools are well-positioned to infuse social activism with authentic personal learning when students are given the tools and the mandate to create social action products. Establishing a strong partnership between Makerspace and core content teachers where both substantially contribute to the shared curriculum holds great potential for bringing about increased student agency, activism, rigor, and personal learning into schools.

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