unboxed

A JOURNAL OF ADULT LEARNING IN SCHOOLS

HTH
Graduate School of
EDUCATION

Above: 11ᵗʰ grader Kalib from High Tech High Media Arts embroiders patches to sell in support of the organization Take Back the Night which works toward ending sexual violence.

Cover: Student work from the 12ᵗʰ grade pop art project at High Tech High International.

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Welcome

When I was in eighth grade, my social studies teacher asked me if I wanted to help some teachers learn how to use "hypercard", the computer program we'd been using in his class to craft presentations (this was 1994, so the concept of "death by powerpoint" was still a long way off). He took a group of us down to the district office in a convertible that he'd restored himself.

It felt simultaneously topsy-turvy and utterly natural to be in the role of teaching teachers. As you can imagine, it did a lot for my self-confidence to be in this role. We also genuinely did have useful expertise to share. Once I went to high school, nothing like this ever happened to me again, and as I look back, it's striking that nobody ever asked me to talk to teachers about my true area of expertise: that is, being a student at school.

I returned to this afternoon in eighth grade while editing this issue, because our authors have a lot to say about what happens when you listen to what students have to say about their learning, and, going further, when you

A 12ᵗʰ grade student at High Tech High Media Arts explains gerrymandering to a teacher as part of Mele Sato's Electioneering Project exhibition.

"officially" bring them into the process of school improvement.

In the first article, Shreena Bhakta and Eliana Meza Ehlert set the tone with a guide to codesigning with students, which is especially useful because both of them are students. Carmen Coleman tells the story of a large school district in Kentucky that made student storytelling about their learning into an official part of the school calendar. Andres Perez tells a story about high school students helping other teenagers who are struggling with mental health.

We also have two stories about "C3 Mobility," a project that paired high school seniors with college students so that the college students could help the high schoolers navigate the application process, a story about the tricky balance between "divergence" (letting people do what they want) and "convergence" (making sure everyone's doing the same thing so you can compare it) in school improvement, and a piece by Amanda Meyer with specific, usable guidance for subverting the influence of white-dominant culture in school improvement.

Thanks for joining us!

Alec Patton
Editor-in-chief

A Guide to Codesign By Students For Teachers

Shreena Bhakta
California State University, Fullerton

Eliana Meza-Ehlert
Pitzer College

C odesigning is the process of collaboration with all stakeholders—students, educators, and everyone in-between—to design something, whether that be an event, project, planning session, proposal, or something else entirely. (Note: we will use these words interchangeably throughout this article.) As an educator, you might think it's easier to go about your day and plan things on your own, but we know you are all looking to make experiences better for students. And you probably already know the answer, but who is going to have the best ideas for how to actually make things better? The students themselves! To make meaningful improvements for students, you must make these changes and decisions in collaboration with students.

We're confident about telling you this because, though we are now in college, during our seven years as High Tech High students—and eventually, student leaders in the Student Ambassador program—we worked alongside our teachers and school leaders to plan and make decisions both in and out of the classroom.

In the spring of our senior year, the Improvement for Equity by Design (IExD) team at the High Tech High GSE asked the two of us to facilitate the Empathy Interview portion of their Continuous Improvement 101 workshop. If you've never heard of an empathy interview before, it's a one-

on-one interview in which the interviewer tries to gain insights into the interviewee's perspective by asking open-ended questions and listening without judgment.From there, our role as Student Consultants was born. Since then, we have continued to share empathy-based strategies with educators and created our own workshops on student-voice and codesign.

Our codesign work with the GSE has spanned over the course of two years. In the spring of 2021, we met with a team of students from several High Tech High schools, ranging across all grade levels. As a group, we shared our personal experiences with codesign in order to compile some suggestions for people who were looking to get started with the process. We reflected on times when codesign went well and when it went poorly, and shared our stories in order to find some common themes. Based on our experiences, we've identified five steps that frequently show up in the codesign process.

While the steps and tips provided in the guide may feel like a review or basic introduction for some educators with codesigning experience, there are plenty of opportunities to level up your current plans. Roger Hart's Ladder of Children's Participation provides a helpful visual showing how student voice is integrated into the education space and community—our hope is that by the end of this article, you'll leave with some ideas in mind of how to move up this ladder.

It's important to note that the steps we'll be discussing aren't rigid and are simply a guide to support you through codesigning projects with students. As we dive into each of the steps, remember to take what will be most helpful for you in the process. Each codesign experience is unique and does not fit into a rigid mold.

Who This Is For

This guide is for teachers who want to bring students into the process of designing what happens in the classroom. Because we went to a project-based school, most of our experience is in codesigning projects with teachers. Most of the content discussed in this article will be geared towards the project design process. However, you could also use the steps in this guide to design anything from college application support to the layout of your classroom!

Step 1: Preparation of Adults

To begin the codesign process, ask yourself two questions: Why are you choosing to codesign with students? What will student codesign bring to your project?

Effective codesign with students is likely a mindshift from what you experienced as a student. From an adult perspective, there are probably very

few times in your history as a student when your voice was activated and engaged throughout the learning process. To combat your understandable tendency to replicate what was done to you, it's helpful to pause and reflect on why you are choosing the codesign process, and what areas you might need support in making this shift of practice. For example, ask yourself if you have made any of these common mistakes:

1. Have I only invited the student closest in proximity?
2. Have I disregarded students' schedules or prep time?
3. Have I not shared explicit goals or a purpose as to what we are doing and how you will contribute together?
4. Have I neglected to follow up after the meeting to share how their voice was implemented?
5. Have I not thanked students directly?
6. Have I involved too few students in my process but advertised my work as involving "student voice"?

This type of engagement practice is common and misguided. If you can reflect on what ways you have worked with or have been worked with in the past that feel both positive and negative, you are better positioned to act upon your values, design moments of belonging and inclusivity, and understand the difference between student presence and student voice.

As a senior in high school, I (Eliana) was a part of the Student Leadership Council (SLC), a group started by school administrators to bring together students from all four grade levels. The goal of SLC was to implement student voice into choices that were being made about the online schedule due to the pandemic, as well as reopening plans.

Students in SLC felt empowered to share their perspectives honestly because the school administrators embodied the first norm of the "preparation of adults" step: **listen to understand**. It's not enough to have students share — adults need to make an effort to understand and be open to hearing all student perspectives. Acknowledge what the student is saying and talk about how it could be considered moving forward. Even if their input can't be implemented, let the student know they are understood and heard. School administrators in SLC took the initiative and time to listen to students and work alongside them to integrate their ideas.

The second norm is to **respect students as equal partners**. Respond to students like you would to an adult. Students should be heard as a person with thoughts… because they are! Do not respond to the student like a novelty, like, "Oh how cute, she's having grown-up thoughts."

It's also important to make sure you're engaging in conversations that are relevant to the student's knowledge and understanding of the material or topic. Students are experts in their own experience and perspective, which is a key ingredient for your work as an educator that you don't have on your own. Students may not be experts (yet) in molecular biology or American history or educational theory, so avoid framing your feedback questions with subject matter expertise as a prerequisite. Instead, seek to understand how students experience the design of a project. You might ask questions like:

• Which part of this project sounds most exciting to you, and why?
• Are there parts of this project that you would not look forward to? Why is that?
• If you were going to [insert goal here], how would you think about getting started?
• In this project, we hope to [insert goal here.] When you think about this, what do you wonder? What are you curious about?

Step 2: The Invitation

Which students should be at the table? How will you invite them to join you in the design process?

Keep in mind, students are not interchangeable! As a rising senior, I (Eliana) was asked to give feedback on a 7th grade project. While I had a lot of feedback that I could share, the demands and experiences of a rising senior are quite different from that of a middle school student, so I think the value of my feedback was limited.

You may want to invite students who have experience with the issue you want to tackle. For instance, if you're a 12th-grade teacher designing a college essay writing workshop for your students, you may want to invite graduates who have recently gone through the process and can share what they wish they had known about the process, college essay advice, and general encouragement to rising juniors.

If you are designing a project for your class, your actual students will be the best codesigners. It can be very easy to engage with students who are more vocal, participate often, etc., but some of the most valuable information can come from students who may not fit this mold. The codesign process will be much richer if you invite and include students who:

• May not seem interested
• Present themselves as quieter/introverted
• Don't think they have any good ideas to contribute
• Have difficulty staying focused in class
• Are neurodiverse

If you're looking for ways to expand your student group and understand the impact it'll have on your work, we recommend watching Susan Cain's TED Talk "Quiet: The Power of Introverts in a World That Can't Stop Talking" and reading Jennifer Gonzalez's "Four Ways Teachers Can Support Students of Color."

Do a little work to cultivate interest in the design process itself. Let students know that their contributions would be very valuable to you, the entire classroom, and/or school community. The best way to do this is to integrate their feedback early and often. But be careful—the opposite is also true! If students see that you are not integrating their input, they may become less willing to engage.

When engaging in codesign, it can be tempting to jump straight into the design process; however, it's important to think about the dynamic between your students as well. If students are not comfortable with each other, they may feel less inclined to speak up and share their ideas. Consider inviting students with similar experiences or interests so that they feel comfortable enough to share their thoughts or make a plan for how you will create a safe space for sharing across status differences. One idea we have that's worked for us in the past is setting and creating norms with students. When I (Shreena) was in middle school, my class would do personal group discussions. Everyone would set and review the student-created norms before every conversation. This allowed everyone to feel more comfortable when sharing.

We hope that your biggest takeaway from this section is to make the process fit the students, don't fit the students to the process. Let the students drive the work!

Step 3: Preparation of Students

Now that you have your team, how can you ensure students are as prepared as possible to codesign with you?

Let students know what you expect from them and give them time to prepare. For example:

- Will they be participating in an icebreaker?
- Will they have a speaking role?
  - » If students will have a formal speaking role, allow them ample time to practice and support them in preparing.
- Are there any questions that they will be expected to answer during the event that they should know in advance?
  - » It may not be the case that you have questions prepared for students, but if you do, let them know that you'd like them to be thinking about the questions ahead of the codesign session.

There was this one time I (Shreena) felt woefully unprepared for my Empathy Interview. I was set and ready to interview a few students at a Continuous Improvement workshop, but the students never arrived. At the last minute, I had to prepare questions to interview my former principal, who happened to be in the Zoom room, about a whole new topic. This was a stressful experience for me, but it serves as a great learning lesson that can be applied to the codesign process! If students do not have ample time to prepare for their roles, they might feel unprepared for what you are asking them to do during the event/meeting.

Our second tip for this step is to create a space for students to get to know each other. For many students, one of the most dreaded experiences is being introduced to someone new over email—it is incredibly awkward! As an eighth grader, I (Eliana) participated in a youth summit for climate activism. A few weeks before the summit, we were asked to introduce ourselves to each other through email. (Imagine dozens of middle school and high school students from around the world trying to establish connections through email! Hint: pure chaos!) While the intention of having students build connections prior to the conference was well-meant, not all of us had the skills to introduce ourselves, follow up through email, and manage an email

thread.

Another form of communication, such as a more casual group chat where students can easily reply to one another, could have been more effective in that situation. There are numerous creative ways you can allow students to connect with one another. You can pick out some fun icebreakers that students can do with each other in person, or over Zoom, that can serve as a good point of connection rather than an awkward email introduction.

Step 4: During the Event

There's no clear-cut way to design your event. We wish we could say that there's some sort of magic formula for event design that will work every time, but it will vary depending on your discipline and the stage of planning that you need feedback on. However, we do have some tips to make this process easier.

Our first tip for this step is **to organize your time well so that there is equitable airtime**. Take space to speak, but also give others the space to speak, and actively make students feel that they are part of the meeting. Don't assume that equitable participation will happen naturally. It's not awesome when one student is given more airtime than the rest, or when the time is unorganized and airtime ends up being unequal. Some strategies we've seen work well in the past include using a "talking object" to symbolize whose turn it is to speak. Students have the option to skip their turn, but this method allows everyone an equal opportunity to share. If you're facilitating the event, you may find it helpful to take note of who is taking up space and noticing if you need to help create space (usually through gentle reminders, or promptings) for all students to have the chance to share.

The second tip is to **be clear about students' roles in the session**. Are students acting as facilitators? Decision-makers? Feedback-givers? Make sure that both adult and student participants are clear about their roles. In addition, be clear about what students' ownership is over the project and that more ownership often means more involvement in the planning. For example, if a student is involved throughout the entire codesign process, they are going to have more ownership over the project, but they will also be putting much more thought, energy, and time into the codesign process. On the other hand, a single codesign event in which a student is only giving feedback after the project planning has taken place will require less time and commitment from students, but perhaps also mean they have less ownership over the project.

The last tip is to **make sure everyone has the opportunity to contribute in a way they feel comfortable with**. For example, if your event is on Zoom, you could open up the chat for contributions, make breakout rooms, or let

people prepare their contributions in advance. Don't expect everyone to feel comfortable just jumping into a conversation with a new group.

There are a few more considerations as you plan for your event:

Feedback protocol
- How do you want students to provide feedback?
- Which mediums will you use?

Space and setting
- Are you doing this with an entire class or only a few students?
- Do you have a slideshow that you'll need to share or any A/V set-up?

Dynamic between students
This is the one we've personally seen most often overlooked.
- Are there students from your class that will have already spent time together and be comfortable engaging in pair-share? Or is it better to do an icebreaker first?

Keep these questions in mind as you begin planning for your event.

When I (Eliana) was a seventh grader, one of my humanities teachers invited several students from our class to provide feedback on a humanities project that had already been developed. It was made clear to us that it was not mandatory that we participate, but that she would love our input if we were interested and comfortable. She was also intentional about stating what our role would be in the codesign process (in that instance, it was providing feedback). I decided to accept! During the event, my teacher pitched the project to us, then asked if it was one we would be interested in, and if not, what could be improved about the project. The project was generally well-received by all of us, and ended up being implemented the next semester. Overall, my teacher did a great job with the codesign process. She prepared us ahead of time by making expectations clear and created room for student voice. If she had wanted to improve her codesign process and make room for more robust feedback, it may have been helpful for her to offer multiple mediums for us to submit feedback, such as a written format.

Step 5: Follow Up

How will student ideas be incorporated into the project design? How will you acknowledge student participation in the codesign process?

It's easy to forget about this step, but it's important to thank everyone involved in the codesign process and keep them updated. After wrapping up a Continuous Improvement workshop, I (Shreena) am always thanked for taking the time to engage with the participants, which makes me feel

appreciated for taking time out of my day to work alongside stakeholders. After the workshop is over, I receive an email from the IExD team, thanking me for my work and outlining the next steps of the project. These emails let me know what will happen next in the process, leaving room for open communication even after the event. The emails also often share the impact of the event, shoutouts, feedback, and more. All in all, it's important to inform students about the next steps of the project and take time to reflect with students about the process thus far. This step helps ensure that educators are taking students' ideas into account and actively trying to find ways to incorporate them.

Summing It Up

That was a lot of information! From all of this, we really want you to take away that in order for the codesigning process to be meaningful and fruitful, genuine participation and authenticity on the educators' part are necessary for students to put in that same effort. Students want to thrive in school, and by giving them opportunities to be creative and collaborate on what they want to see and do in their school, educators and students can make school a better learning environment for everyone. Codesigning can allow you to better understand students' needs, discover what is relevant and important to students, and can also support you in creating projects and curricula that are more engaging to students.

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Sarah Strong teaches a math class at High Tech High.

"Dear Math, You are Dreadful"

Sarah Strong
High Tech High & High Tech High Graduate School of Education

Gigi Butterfield
Loyola Marymount University

High School teacher Sarah Strong and High School student Gigi Butterfield co-authored a book, Dear Math: Why Kids Hate Math and What Teachers Can Do About It. *In it, the two sort through hundreds of student letters to math and walk through themes that emerge in the letters and how teachers can center these stories to design classrooms where all students can flourish.*

It is our great pleasure to share Chapter One, "Dear Math, You are Dreadful," with you!

Dear Math, I hate you! You fill me with deep dread in my everyday life.

Eli walked into class on the first day of the semester and slumped down at the table where his name was written on a three-by-five card. On the screen, instructions asked the students to add information to the card, namely, preferred pronouns, interests, and one mathematical strength. By the end of the three-minute timer, Eli's card was empty, and his head was down on the desk. I knelt down by his desk.

"Well, you haven't really given it a chance," I claimed, attempting to infuse lightness and truth into the young man who was clearly grumpy. It was, after all, the first day of class.

"Oh, I've been doing this for twelve years. I hate math, and there is no reason for me to learn it. I don't see why I would give it a chance," he lauded.

I took a deep breath and looked at the other twenty-four kids in the room who were ready for learning and my attention. Their body language was in stark contrast to Eli's, which was seeping with dread.

Knowing I wouldn't win over this student in a day, I said, "Okay, I hear you. I hope to hear more about what brought you to this point of hatred for mathematics. For now, can you at least agree to share your thinking on the puzzle we are working on today with our group? I know your group will appreciate what you have to say."

He rolled his eyes, and I walked away and launched into teaching the class. I knew the next day, he would be taking on my Dear Math assignment, and I would get to hear more about the journey that led him to this point.

The next day, he wrote …

> Dear Math, You are boring, repetitive, and not interesting. You always are difficult. You will never understand. Every single mistake causes even more problems. Math, you have always been my least favorite class. I never got the chance to fully understand the different math concepts, which would make me frustrated and not care to continue to struggle. It made my brain hurt. Although I truly dislike math, I can say it has been one of the more challenging obstacles in my life. I would avoid asking for help to try to learn it myself, but I continued to struggle. This has made me think in different ways and made me work a little harder to think outside the box. Although I can keep talking about my frustrations with math, one way math has helped me grow is by allowing me to be more patient because I know it will take time to get the reward, in this case, the answer. One thing I do look forward to in the future is increasing and improving my ability to solve math problems by myself. I also think that math should not be rushed. So many times, I hear students saying they aren't done or need more time, and I thought we were supposed to work at our own pace. So I think it should be structured to put the groups of kids who are in the same understanding of the topic.
> From, Eli.

Sources of Dread

Dread is an adjective meaning "to involve great suffering, fear, or unhappiness; extremely disagreeable." While many students don't name dread explicitly in their letters, other words arise, like hatred, cruel, pain, turning clear skies gray, unenjoyable, and annoying. We selected the term "dreadful" to sum up these letters because it seemed to truly capture the depth of dislike this group

of students had for math.

> *Dear Math, Why do you even EXIST? I'm genuinely asking because it is such a complex subject. I don't want to be rude or anything, but you can be a PAIN sometimes to everyone. I've had other people agree with me on that, but it's something we can overcome.*
> —*Edwin, tenth grade*

Why do so many students find math class dreadful? And why do so many adults have negative comments about the subject?

For Eli, his dread came from math being "repetitive, boring, and not interesting." For Edwin, the dread came out of it being "a complex subject" and included questioning the purpose of math's existence. For Hayley, the dread stemmed from a feeling of being "dragged along" without understanding, while math itself was holding on to so much certainty. For other students, the dread came from a bad experience, a poor grade, the stifling of their thinking, or the way they were treated in class if they didn't know something.

While the stories in the letters are powerfully descriptive, the statistics are alarming. In some school districts, over 50 percent of students fail their freshman math class. The situation doesn't improve in college. Rather, a 2011 report found that, across the country, only 50 percent of students attain a passing grade in college algebra (Gordon 2008). It's no wonder that widespread dread exists for being required to do something that often leads to failure.

> *Dear Math, You are best classified as a regrettable necessity.*
> —*Andrew, twelfth grade*

It seems students and adults of all ages dread math, so when does it start? I have worked with teachers and led an exercise in storytelling about their math experiences. One activity we do is create graphing stories. Many teachers describe their learning journeys with math like the examples in figure 1, on the following page.

Students express positive feelings in early elementary school, and then by middle school, a negative trend begins. Many of their storylines head back upward if they begin teaching math, but those negative years are extremely common. In students' Dear Math letters, many of them identified their "moment of fracture" in their math identity as occurring in third or fourth grade, while the second-largest percentage was in middle school. Further research on math anxiety shows that it might not start at one age in particular, but it was always accompanied by some type of test or performance (Boaler 2017).

Figure 1: Graphing stories of feelings in math class by grade in school.
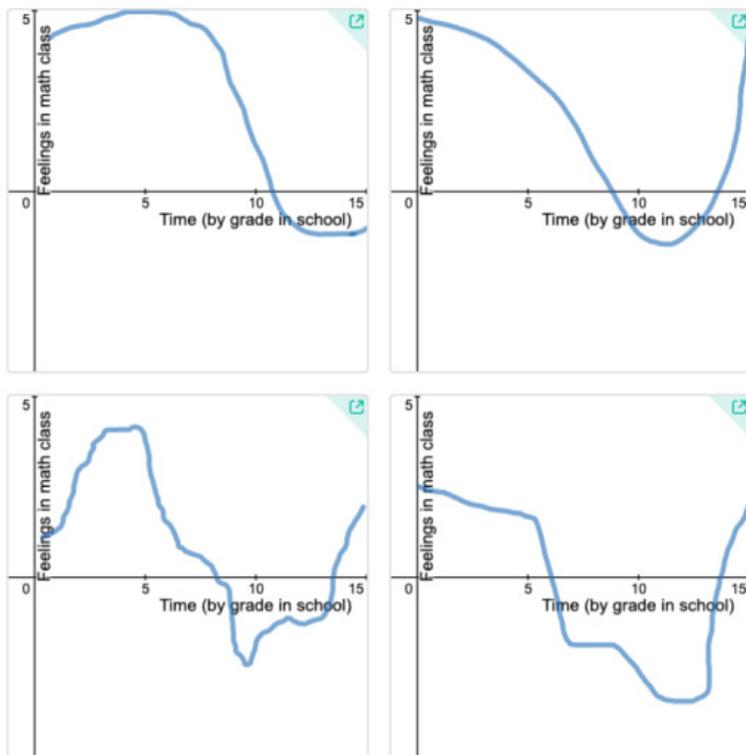
Dear Math, Never liked you, never will, you cause me so much pain.
—Rayon, seventh grade

The feeling of dread for mathematics may be classified as stemming from pervasive math anxiety—a problem so massive that a whole field of research is now dedicated to it. A study conducted in 1978 concluded that about 68 percent of students enrolled in mathematics classes experience high mathematics anxiety (Betz 1978). More recently, a 2009 study showed that about 17 percent of the population have high levels of math anxiety (Ashcraft and Moore 2009). Societally, we perpetuate this thinking, normalizing the idea that not being mathematical is just a regular consequence of life. People joke and make light of this type of thinking, whereas the idea of being illiterate is much less culturally acceptable and rarely the butt of jokes in the media.

Dear Math, I hate you; you make my clear skies feel grey. In a world without you, I don't know what I would do, though your own significance doesn't have to involve me. I've never liked your certainty of 'right' or 'wrong' when it ends up with just me unknowingly being dragged along.
—Hayley, twelfth grade

Because math invokes such strong emotions, often feelings associated with dislike and dread, I hope that we can hold space for these emotions and create activities where students can explicitly share their stories and unpack their feelings. Beyond caring about math and our students, we need to care about our math stories, particularly mathematical identities: how students see themselves as mathematicians and participate in mathematical spaces. When he was president of the National Council of Teachers of Mathematics, Robert Berry stated, "Effective teachers affirm positive mathematical identities among all of their students, especially students of color." But why should we care about our students' mathematical identities? Can't we just teach them the processes they need to know?

The answer to this is an emphatic "No."

The learning process inherently includes the development of identity. In his book on communities of learners, Étienne Wenger (1998, 215) explains, "Because learning transforms who we are and what we can do, it is an experience of identity. It is not just an accumulation of skills and information but a process of becoming—to become a certain person or, conversely, to avoid becoming a certain person. Even the learning that we do entirely by ourselves contributes to making us into a specific kind of person. We accumulate skills and information, not in the abstract as ends in themselves, but in the service of an identity."

Students naturally form their own mathematical identities with or without our involvement. If we want students to engage in a better relationship with math, we need to guide them toward more positive mathematical identities. Recognizing how the unpleasant feelings they already have affect their identities is a strong first step.

Dear Math, You are a cruel, heartless mistress.
—Tony, twelfth grade

Being able to share such strong emotions clearly creates the space to forge a path out of these emotions. Students may not even need advice or solutions for the problems they are experiencing; they may just periodically need to vent. Students come into our classrooms each day with a great variety of stories. If we do not create space for them to share their stories, then we are making it more difficult to help them create healthier relationships with math overall.

A Less Dreadful Experience

Dear Math letters are a critical tool for understanding and overcoming dread for two related reasons. The first reason is that the letters give students a space to share their story, vent, and unpack the ways they have become the mathematician they are today. We can normalize experiences from the past, process them, and collectively make sense of a path forward.

The second reason comes from the teaching standpoint. If we don't ask, then we are designing curricula and making instructional decisions relying on our assumptions from prior experiences, our own math experiences, or feedback we get from the loudest students. I used to follow the ignorance-is-bliss concept, ignoring how my students already felt in favor of making my class as awesome as possible to help them love math. How wrong I was. I regularly assumed that the students were as ready to think about math as I was and that they were excited to learn it in the same ways that had excited me.

I am reminded of Chimamanda Adichie's famous 2009 TED Talk entitled "The Danger of a Single Story." In it, she states, "The single story creates stereotypes, and the problem with stereotypes is not that they are untrue but that they are incomplete. They make one story become the only story."

> *Dear Math, I have always hated you; I can never do you. Sometimes I get the answer, but that's only on the better types of math. But I guess I need you because those 'Sometimes' are important in daily life. But I still hate you. I never look forward to doing you, I always look forward to finishing you and going on with my day.*
>
> —*Sam, tenth grade*

Mathematics classrooms are an easy space to become "one story." There is a math problem, there is a way to solve it, everyone tries it and does well or doesn't, and then we move on to the next problem. Dear Math letters hold space for and give voice to all the different math stories in the room. They allow healing for those with traumatic math stories and encourage the co-creation of stories that are whole and complete. Most importantly, they tell us things we wouldn't have known if we hadn't asked.

Every time I open a new Google Drive folder containing my students' Dear Math letters, my heart starts beating a little faster. I know some letters will reveal a dread for the subject that I must engage students in each day for an entire semester. I'll have to address their feelings in the ways that I teach. If the dread that students feel is connected to feeling rushed, we might try out fewer activities in our class that focus on speed (Chapter 6 has great examples of this). If their dread is connected to their grades, we might consider alternative grading activities or more equity-oriented assessment strategies (Chapter 5 has ideas for this).

But if I didn't ask, then I might delude myself into thinking that everyone was walking into my class ready to have a good time. Furthermore, I might unintentionally impose my own math story and identity markers onto my students, joining the oppressive figures I sought to dispel. Delusion and oppression are unhealthy starting places for a semester of work together.

Dear Math: How to Get Students to Start Writing

So, how do we engage students in the Dear Math letter writing? The first step is to necessitate the letter. Oftentimes, students aren't used to writing in math class. They also are unfamiliar with being reflective and metacognitive about the discipline of math. Lastly, they likely haven't ever personified math and "talked to it."

I usually set up the assignment by saying:

"As we start this school year, it is important that I get to know you as mathematicians. Who you are as mathematicians and the stories that formed you before you got here are incredibly important to me. It is my goal that you would all feel like you are learning and growing each day as individuals and as a collective math community. Without understanding who you are, I cannot properly design and facilitate this math classroom for you. I'll start by reading my Dear Math letter to you.

After my story, I ask, "What did you hear in this letter? What surprised you? What parts of my story relate to yours?"

After the discussion, I say, "Today, we are going to write 'Dear Math' letters. I look forward to learning more about your math story. Thank you for sharing your stories with me."

Questions for Prompting:
- Tell me about a time in elementary school when you felt successful in math class. What happened?
- Tell me about a time in elementary school when you struggled in math class. What happened?
- When your friends talk about math, what do they say or do?
- What is one way that math has helped you grow?
- What is one of your greatest mathematical strengths?
- What is one of your greatest mathematical challenges?
- How do you plan to engage with math in the future? (Going into a STEM field? Using math in your career? In your life? Tackling complex problems in a systematic way?)
- What can you thank math for?
- How would you change math classrooms?
- What would you like more of in math classes?

Processing Dear Math Letters

After students submit their letters, I set aside about an hour per class to read over the letters and listen to students' stories. I underline, share celebrations and connections, and thank them for sharing their letters with me. While it is easy and natural to feel defensive and jump into "solutionitis" when reading the letters, particularly ones that are steeped in dread, I try to receive the stories just as they are. As we will see in the coming chapters, the work of forging a new identity will happen during the semester and year, not just in the moment of writing and responding. This first pass at the letters gives me valuable narrative data. This data comes both in extreme stories of dread (like the ones referenced in this chapter), extreme expectations for the class that feel out of line with my hope for the class (like the letter from Eli, who asks for academic tracking, a practice that is out of alignment with the philosophy and design of my school), and overall trends.

A variety of stories should be expected from a class, and if there is a disproportionate amount of negativity or dread in a classroom, then it is imperative that you create specific activities to acknowledge and transform on a class level. In this case, I will often share some student writing (anonymously) with the class and then share a goal and track progress toward that goal. For example, I might say, "My goal is that you find value in coming to math class each day, and I'm going to design activities that help the lessons feel valuable to you. Each week, I will give you an exit ticket, and I will ask you if what we did this week felt valuable. In this way, we can keep getting better at meeting our goals."

Processing Dear Math Letters with Students

Another activity I have done with the Dear Math letters is to have students exchange their letters and read the other person's letters for connections and surprises in the stories. This could be anonymous or, if expectations are stated from the beginning, with the names intact. When students read each other's letters, they immediately begin an empathy-building exercise that serves both to understand that your math story is just one of many and that our math community is composed of a beautiful, diverse set of learners who all hold value in the space.

I have had students read over their own Dear Math letters with different lenses depending on our work that week. In one project, we were working on understanding our shifting math identities, and the students needed to self-identify a "fracture" in their math identities in their stories. After each student identified a "fracture" and the grade they had been in when it happened, one of their assignments for the remainder of the semester was to find a student in that grade and offer them support on their math homework. The students who did this assignment attested to feeling great about helping

other students and about realizing that the types of math that had caused such deep wounds in their math identities were now very doable for them.

Dear Math letters are certainly not the only way to promote this type of storytelling and identity unpacking. For more activities and projects to help unpack students' mathematical identities, refer to Appendix A: More on Math Identity.

The Importance of Mathematical Identity Work

As learning theorist Yrjo Engestrom (1995) stated, "Identity work is never 'done,' it is always ongoing. Although a person's identity is not determinable, neither is the meaning-making involved in identity work entirely free but, instead, is mediated by the discourse and practices of people's communal social activity systems." Because of this, we create space for students to share the stories that formed them and for the possibility of evolution in those stories over the course of the year. The possibility of evolving is related to the idea of a growth mindset, and, while it's not the only point, believing that success can be found is an important step. Even day to day, the ways students feel about themselves as mathematicians can shift dramatically, but we can design a class where they can flourish when we tune our eyes and ears to their stories and ways of being in a math class.

> *Dear Math, I have hated math ever since third grade; it's annoying and unenjoyable. It used to be that I liked math, but that all changed in third grade when we had to learn our times tables, and I was always stressing. I like normal multiplication, the kind where you can ACTUALLY take your time, but not this.*
>
> *—Andrea, seventh grade*

Overcoming Dread in the Classroom

Amber and I met when I was her teacher in her freshman year. As a student, she seemed driven and justice-oriented. As a mathematician, she was brilliant at organizing information, she asked many questions, yet she lacked confidence. One of the first times we met, she told me that she had test anxiety, and as we worked together, I noticed that her anxiety was pervasive in her work. She would rush to an answer, second-guess her thinking, and then her brain would "shut off" (her words), and her emotions would take over. In her sophomore year, she wrote a Dear Math letter in which she unpacked this anxiety and the resulting feeling of dread that was now a part of her heading to math class. Her letter that year read:

> I really like you. But you don't come naturally to me. I have to work extra hard to understand and really conceptualize what you have to offer. There have been times where I have felt discouraged, frustrated, and

exasperated, especially on tests, which is where I believe I can never fully express all of the things I know in a way that helps me be successful. —Amber, ninth grade

By reading and responding to her Dear Math letter and giving her space to unpack her story and mathematical identity, Amber's teachers were able to dig deep into what was blocking her achievement and connections, and they highlighted her strengths. From there, they helped Amber build a new story for herself about who she was as a mathematician.

I had the opportunity to teach Amber again her senior year, and, as we always do, Amber wrote another Dear Math letter, reflecting on her mindset growth and identity during her high school experience. She wrote:

> While the term 'math growth' might inherently imply academic growth, I think for me it's a lot more about a shift in attitude and my reactions when I am faced with challenges. I developed a sense of patience and open-mindedness for the first time ever. I no longer got as frustrated with myself when I didn't understand something and would allow myself to take my time. As I reflect on my past experiences and emotions related to math, I can confidently say that I have a strong foundation. And this is a great amount of growth for me because two years ago when I wrote this letter as a sophomore, I could not say that I felt like I had a strong foundation in math. —Amber, twelfth grade

Gigi's Reflection

The notion that math is dreadful is not a terribly uncommon one. This dreadful relationship depicted in these student letters is a mere echo of the greater public opinion. In fact, it's so common that it has become a trope in the media. My favorite example is in the movie *Mean Girls*, when Damien memorably embodies dread upon hearing Cady's plans to join the Mathletes and fearfully notes, "That's social suicide!"

Damian's dread perfectly represents the cultural conundrum of math: if you're bad, you're stupid; if you're good, you're a nerd. I can recall feeling the effects of this mathematical fork in the road, becoming stuck shooting for some nonexistent gray area or third path. In the early days of my freshman year, the anxiety of "the decision" crept toward me, appearing on whiteboards and through hallways. Which path would I choose: "scholastic slowness" or "social suicide"? Although it may seem as though the ultimate moral lesson in every fable, story, and movie is to rise above the social pressures of coolness and run into math's comforting, outstretched arms (Cady does end up joining the Mathletes and learning incredibly pertinent lessons wildly applicable to her situations in the greater world—how perfect!), doing so is rarely so simple or perfect. Both paths, in this case, are surrounded by pressure and

labels. Eventually, I made my choice based on not what I thought would be the best, most academically and socially fulfilling route for me but on the outside pressures in my life. My family's aspirations for me just outweighed that of my classmates' opinions, and so my fate was sealed (time to buy up all the fanny packs and satirically large glasses in town): I was a nerd.

This decision brought about a whole other type of dread, one that pressured me to constantly act at peak performance. To get a wrong answer, especially publicly, was to move backward on the path. This pressure was exhausting and caused a lacking math mindset. When you're too afraid to be wrong, you end up missing out on learning why you aren't right. While this demand for constant correctness did admittedly result in a relatively high GPA, it was rendered arbitrarily in terms of genuine learning. Ensuring my report card remained devoid of any number beginning with a three was exhausting and all-consuming, leaving me without sufficient room to equally value my grades and my understanding of the concepts being taught.

Throughout my first semester of ninth grade, I learned that the notion of the binary paths of arithmetic, much like Cady's limit, "doesn't exist" and, furthermore, that sometimes there is no moving backward or even forward. I learned that math is merely (and beautifully) the conceptualization of answering questions. It brings tangibles to the intangible. Math is one big, beautiful mess, like a game of Chutes and Ladders, which allows for high levels of performance and true understanding. In studying it, you might end up going up, down, left, or right, but no matter what, you'll always be learning. That doesn't seem very dreadful at all.

Invitation to Reflect
- How does your math story shape how you teach math?
- Why might it be important to recognize our students' math stories and math identities as we design our classrooms?
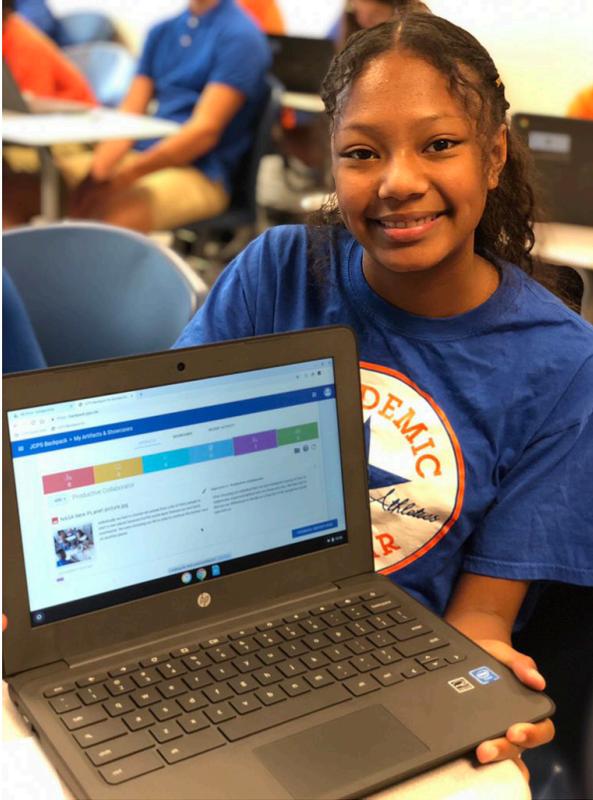
A Jefferson County student shows off her digital backpack

"Worksheets Won't Make Good Artifacts":
Deeper Learning in Kentucky

Carmen Coleman
Jefferson County Public School District

Part 1: Setting the Scene

Danville, Kentucky

Several years ago, I had the opportunity to serve as superintendent of Danville, a Kentucky district of about 1800 students. There, with a forward-thinking school board who recognized the need for a very different kind of school experience, we began to explore.

From San Diego to New York City, we visited schools with visions far beyond state test scores. Though the contexts were different, there were many similarities. Students were engaged in learning that mattered to them. They were creating real world solutions to real world problems. They were problem-solving, collaborating, and thinking critically. They gave one another feedback, and revised. The teacher was truly a facilitator of learning and a coach—and the quality of the students' work was unlike any I had ever seen.

Projects and challenges led to products that were beautiful and inspiring, work that had obviously been produced with tremendous pride. The purposes for the students' work were also authentic, whether partnering with the 9/11 Ground Zero Museum Board to recommend artifacts to display, or building

generators from old bicycle parts, it was obvious student success had been defined far above the "accountability" turbulence.

What we saw and learned from those visits gave our work a new—and even more urgent—purpose. Our students couldn't begin to be able to compete with those we saw in San Diego and NYC, and not because of any shortcoming on the part of the student. The barrier was us, the adults, and our very limited vision for what school could and should be.

Our work focused on one driving question: What does our diploma mean? We realized after only a short discussion that although we could all say what we hoped it meant, there wasn't a consistent understanding across our team. So we started with the basics: in the most literal sense, it meant students had completed 13 years of school (served their time?!) and met, at least minimally, the requirements to graduate. Our community surely hoped their 13 year investment would result in more. But what? Answering that question seemed a good place to begin.

From the Harvard Graduate School of Education to PBS NewsHour to NPR, all of a sudden, our small school district was visited and written about. It was an incredible experience. Most importantly, the kind of work our students were doing became much more interesting and inspiring. Products like, "The Case of the Hungry Hound," a video created by one of our middle school students as part of his Performance-based Assessment Task (PBAT), thanks to our partnership with the New York Performance Consortium, became much closer to the norm during that time. As result, I have to believe the students who were there were much better equipped for successful futures.

Jefferson County Public Schools

I am always amazed with where life takes you. Having grown up in rural Kentucky, with my first teaching position being at Stamping Ground Elementary School in the very same classroom where my mother taught first grade years before, I had no idea what my future held. I just wanted to show up every day for those fourth graders, and do the very best I could by them. My mission and drive haven't changed, but my context certainly has as I find myself, 27 years later, serving Jefferson County Public Schools (JCPS), the largest district in Kentucky and one of the 30th largest in the country, as Chief Academic Officer.

I met the current superintendent years ago when we were connected by a mutual friend because of our passion for deeper learning. The friend had been principal in a neighboring district to Danville, and he'd seen first hand the kind of work our students had started doing. The story he tells is that at the football game, when our students launched miniature pumpkins at

halftime with catapults and trebuchets they'd built, a parent said "I know we can't beat them in football, but can we at least make sure our kids get to do things like that?"

This former principal, in a new role with the state department of education, asked if I'd talk with Dr. Marty Pollio, a principal he'd met in Louisville who was interested in project-based learning. We met, talked, made ambitious plans for his school, and several weeks later, he let me know he'd been hired as the acting superintendent. He asked if I'd join him.

And so we began.

Jefferson County has close to 100,000 students (over 50 times more kids than Danville) and more than 150 schools. When we joined, it was also under threat of state takeover. The Kentucky Department of Education had just completed an audit of all district operations, from special education to transportation to teaching and learning to human resources. Nothing was left untouched.

But there were bright spots. The district was hungry for leadership, and there was so much talent. The board and the teacher's union had also worked together to create a strategic plan that had, as its number one goal, to ensure deeper learning for all students.

As we awaited the results of the all-encompassing look into every aspect of the district, we cast a vision. As the superintendent often said, we had to take "big swings" to get this right—and we agreed that school, as it was, was outdated at best if not obsolete.

We started with that same question we'd answered in Danville, "What does our diploma mean?" We began by talking with as many groups as we possibly could, and in those conversations, asked four questions:

1. What are the most important skills you want your children and/or your students to have when they graduate? What is most important to success? If each student came to school with a backpack they'd carry throughout their journey and on to their post secondary lives, what would you want to be sure was inside?
2. What kinds of experiences lead to the development of these skills?
3. Where, in your school today, or in your child's school today, does he/she get the opportunity to grow and develop those skills?
4. Do ALL students get those experiences you described?

The responses were consistent, no matter the audience. First, we agreed that academic skills were a given. That, after all, is what schools and districts are required to do. The skills they listed were those you might imagine: the ability

to persevere when faced with challenges, to problem solve and to be effective communicators. Thinking critically and creating were also common to the lists along with empathy, and the appreciation of differences in individuals and cultures.

The answers to the second question were always interesting and fun to hear. I would often pose this as a challenge: If I gave you 30 students and said you had one week to create a learning experience that would ensure the students could show some kind of evidence of having developed and grown in one or more of those skills, what would you do?

What I found especially significant is that every group could very quickly describe a learning experience that cultivated the skills they wanted to generate as well as the application of a wide variety of interdisciplinary academic content. Some shared they would take students on a trip, and they would let them do all the planning and organizing. Others said they would ask students to tackle an issue facing the local or even global community. Some said they would have them complete and then design a breakout game. Planning and planting a garden was another I often heard. Even groups who weren't educators had great ideas! Almost always, they would begin by posing some kind of challenge for students to tackle.

As you might guess, no group ever suggested assignments we might typically see in school. They didn't answer multiple choice questions or complete a worksheet. They didn't create sentences from new vocabulary words. None said they'd have kids create some kind of display from posterboard.

Instead, for every experience suggested, there was a real purpose—and a real life connection. The tasks were challenging, to say the least. The audience was authentic, and the products had to come to life. Students didn't draw a picture of a garden. They created a garden. They didn't plan an imaginary trip. They planned a trip they would actually take. Certainly, the work would require reading and writing, but would ultimately lead to a bigger end—an end students could get excited about.

Never did any group say they'd have the students watch PowerPoints and take lots of notes before getting started. They didn't say they would start by frontloading all possibly relevant information. Instead, they presented the issue or challenge, and had the students go to work. I found this to be so interesting—more on this later.

Responses to the third question were often consistent across groups, just like the first. There would be a special teacher—"Ms. Jones always has her students create gardens," or "Mr. Goodwin teaches this awesome unit where students build catapults and trebuchets." There were also after school, extra curricular kinds of experiences—robotics being one frequently mentioned.

They would excitedly share examples, and these always brought smiles. Whether the participants themselves had experienced what they described or knew children who had, it was obvious that they held these dear. This was the learning that brought great memories and good feelings.

It's the second part of the last question that was always met with a pause. "Do all kids have these experiences?"

The answer, without exception, was no. Some kids benefitted from after school experiences, some kids had certain teachers who created awesome learning experiences, but many never got the chance. After school experiences like Robotics require transportation at the very least—something all kids didn't have. Each group came to the realization that we had an equity problem, and although news of achievement gaps certainly wasn't new, this raised a new question: Could we (the system) be part of the problem? As many of us realize, the answer is unequivocally yes.

We had identified our challenge.

Part 2: The Beauty of Naivete and the Development of the Backpack

There is real beauty in being a little bit naive. The newly appointed interim superintendent of Jefferson County had no district-level experience. He had been principal of two different high schools—arguably one of the most difficult jobs in existence—but he had no experience leading a district, not to mention one with a powerful teacher's union and a 7-member board—a district that was one of the largest in the country. He had, however, spent 20 years in the district as a teacher, coach and principal.

I had been a superintendent in a district of 1800, and had worked at the district-level in another that had, at the time, about 35,000 students. I would later realize the differences between these districts and Jefferson were far greater than size. Being at risk for state takeover was just one of the challenges we would face in weeks to come.

Students were coming back to school and though our vision was big, the day-to-day was all-consuming. Trying to decide whether or not the special glasses the district received for students to watch a once-in-a-lifetime solar eclipse were safe was one of our first and most memorable challenges. Fortunately, the glasses worked, everybody's eyes were protected, and we cleared that hurdle—a relatively small one looking back.

Years of turbulent leadership had eroded trust at every level of the district. This lack of trust showed itself in many ways. The tension in some of our first

meetings is something I will never forget. The central office building was a maze of cubicles, creating small, isolated work spaces. This was reflective of the district culture—individuals working hard but siloed, and no one could see past their own workspace. The absence of a coherent vision seemed to impact every aspect of the district.

Thankfully, we truly didn't know what we didn't know—and we plowed ahead.

We began by producing a set of "success skills" that every student would graduate with. Every JCPS graduate would be:

1. A Prepared and Resilient Learner
2. A Globally and Culturally Competent Citizen
3. An Emerging Innovator
4. An Effective Communicator
5. A Productive Collaborator

We knew we had to paint a much bigger picture of student success—and to get everyone focused on making it happen. We wanted to take those newly established "Success Skills" and have students continually add artifacts showing their learning and growth to a digital portfolio, or as we called it, a "Backpack." And we needed to start now.

Our theory of action was simple—if students were required to show tangible evidence of learning both academic content and in their development of those important Success Skills each year, then they must have learning experiences that would lead them to create these artifacts. As one of our third graders said early on, when he was learning about the Backpack, "Worksheets won't make good artifacts."

Exactly.

The Backpack of Success Skills was scheduled to launch at the start of the 2018–19 school year. We'd made our plans and vision very public. We promised that every student would have a digital backpack into which they would upload artifacts each year, beginning in kindergarten, and that they would be ready on the very first day of school.

Not only that, we decided that during key transition points—elementary to middle, middle to high and high to post-secondary—students would be required to do a defense before a panel to publicly show they were ready for a successful transition. We wrote down this new approach—ensuring a much more engaging student experience—in a book we called The New Normal. Inside the book were the purpose, examples of learning experiences that would lead to great artifacts, and the "Tight and Loose" expectations for

both what would go inside and what would be shared during defenses. We didn't ask for lots of input. We just charged ahead.

While the superintendent and I were doing everything we could to promote the vision during the summer of 2018, our district tech team was searching for the right software to serve as the digital backpack. I will never forget the day the tech team proposed that we build our own software. The first day of school was literally weeks away, our district already had a reputation for creating bespoke internal systems that isolated it from the rest of the state. This approach was a factor leading to the state audit, and we were not looking to continue the pattern.

But there was one thing we couldn't ignore: a team of students had been testing out all the existing software options and found them lacking, and their recommendation convinced us we had to make our own software for the backpack. But every student had to have a digital backpack on the first day of school. In a district where families had grown used to being disappointed by promises from central office,, coming through on our very first promise simply had to happen.

Thanks to the work of our newly formed Digital Innovation Team, when the first day of school came every kid had a digital backpack, as promised. We were on our way.

Part 3: Backpacks, Defenses, and Surprises

The school year started and each student had a digital backpack inside their Google Drive. Our newly formed Digital Innovation team was leading the way, creating lots of excitement within and even outside the district. All of the sudden, JCPS, the district that had been somewhat of a mystery across the state, was front and center. It seemed, to us at least, that everyone was watching—and so many wanted to join us. It was a new day in JCPS!

The first full year of implementation of our Backpack, the beginning of our competency-based system, couldn't have been better. The once-siloed divisions came together to support the kind of work we wanted to see in many different ways. With our Communications team, we created the "What's in Your Backpack?" series, a collection of short videos that explained the purpose of the Backpacks, and delved into aspects of deeper learning such as collaboration and literacy. We defined "quality work" and used a protocol to look at student work during principals' meetings, schools scheduled exhibitions of learning and the project-based approach was on the rise.

Defenses began that spring, and we were so proud of our schools. Every student at one of those key transition points was expected to defend—no exceptions. Although there was never any organized pushback, teachers and administrators had a lot of questions:.

"Do you really think our students can do this?"

"Do you really think it's reasonable to expect a 5th grader to put together a formal presentation, like a graduate student might?"

"What about students with severe disabilities?"

"What about English Language Learners?"

"Do you really expect Kindergarteners to be able to upload artifacts?"

Every time, I answered by saying, "I am not sure. But I do know if we don't expect it, they definitely won't. I'm also positive that our students deserve the opportunity."

From my previous experience, I knew if we could just get to defenses, even the toughest critic would see the value—and they did. Stories were shared across the district about defenses that had panelists in tears. Just as I expected, we were blown away by what the students could do when just given the chance. I remember a 5th grader who'd only been in the country a matter of months. He was dressed in a suit and tie, looking the part of a young professional. He'd invited his dad. This was a big deal.

He looked each panelist in the eye and shook our hands. He introduced himself and began talking about his progress and his goals. He highlighted several artifacts he was especially proud of. He talked about how he wanted to become a doctor because he'd learned so much from helping take care of his grandma. Everyone in the room cried.

There was an 8th grade student at our Newcomer Academy, a school for students very new to the country with little if any formal schooling. She started in English but stopped abruptly. She was looking at her notes, but struggling with the language. It just so happened that the mayor and the superintendent were sitting in along with a district staff member whose native language was the same as that of the student who by now was looking very close to tears. All of the sudden, the panelist began speaking to the young girl in her native language. Then, the student stood up straight, took a deep breath and started again. To say that those who were watching were moved would be a tremendous understatement. Witnessing first hand this student's struggle and success was something I doubt any have forgotten who were there that day.

The stories like this go on and on. For me, one of the most memorable moments was when one of our teachers introduced herself to me, telling me she taught in one of our schools with a very fragile population. She told me about a students' defense she had watched, and described how, for the first time, this student was able to express herself in a way that allowed her to show her special talents and creativity. She talked about how the student smiled, something very rare, as she spoke. Before walking away, the teacher said, "I just want you to know you are saving lives with this."

Students sang, played instruments, danced, shared quotes and performed monologues as part of their defense presentations. One even shared his credit score with tremendous pride. He worked with his dad's body shop, and knew this was important for his future.

After that first year, we'd realized our students could do more than we ever thought possible. They had special skills, talents and interests that we hadn't realized. For the first time, we really knew them—just when they were leaving.

Over the next several months, we spotlighted awesome defenses, held artifact design studios, and discussed the many instructional implications based on what we saw (you can see the debrief document we created here). We created videos of all kinds, from showing great examples of artifacts to directions for students on how to upload. The Backpack, and the defenses, provided an invaluable look into classrooms and the kinds of learning our students were doing.

In some schools, every student had the same collection of artifacts. In others, it was pretty obvious that students didn't really know yet what the Success Skills meant. Many didn't exactly align with the "tight expectations" outlined in The New Normal. But all had jumped in and we were so very proud. Students defended, and panelists talked with them about their learning. They asked them questions and listened to students' responses. Every student in a transition year had their moment in the spotlight and had the chance for meaningful conversation and reflection with a group of adults. Definitely a win.

We continually looked for ways to build teacher capacity for the kind of learning experiences we knew were vital to our students' futures. We formed a partnership with the education design lab 2Revolutions and two local universities to launch an opportunity for teachers to earn a competency-based certificate. The experience for the teachers would be fully competency-based, immersing them into the same structures their students were experiencing.

We provided many professional learning opportunities focused on project-based learning and inquiry:

- We sent teachers to the Deeper Learning Conference in San Diego.
- We collaborated with Envisions to create Performance Outcomes for the Success Skills.
- We created a Teacher Backpack—a one-stop-shop for resources we deemed to be most essential for teachers in our district.
- We continually highlighted the kind of work we saw in schools that embodied the Quality Work Criteria—and tried to show that although PBL was one vehicle for getting there, it wasn't the only way.
- We worked with all district leaders and role groups to help them understand the purpose and the urgency for change, and we calibrated.
- We shared, we elevated through social media channels and hashtags (#JCPSBackpack), and we celebrated.
- We started a summer learning program, the Backpack League, that gave teachers the opportunity to try new approaches. They could submit proposals for "adventures" and then, if accepted (we wanted all of them!), they'd be able to keep the materials they ordered to use in their classrooms during the school year.

After that first year, we found that many teachers were on board. They wanted to design awesome learning for students, but there were barriers that went beyond not knowing where to begin.

Then, we had a pandemic.

Just like for the rest of the nation, it was surreal. Once the shock faded and reality began to set in, we began working frantically to flip our system from one that had, just a short time before, been behind with technology, to one that was fully functioning in the virtual world. Not only did students need devices and internet, our resources had to be converted. Stopping to think too long about what needed to be done was completely overwhelming. We never stopped.

Just as it happened with the implementation of the Backpack, our teams came together and somehow pulled it off. Within weeks we were rolling. Students had Chromebooks and hotspots, and teachers who weren't already using Google Classroom got a crash course. Thanks to the creation of a district Digital Learning Channel, our teachers could learn about that as well as many other aspects of virtual teaching on-demand.

Although we'd gained tremendous momentum with the Backpack the prior year and during the first half of 2019–20, the superintendent and I agreed that now was not the time to push. The last thing we wanted was to cause more stress for our already overwhelmed teachers and leaders.

It's likely that some thought the pandemic was the end of the Backpack and the defenses. They had a great start but we were really still there—the start. We had plans for our next steps, but they'd been surpassed by the immediate needs of distance learning.

But in the spring, an amazing thing happened: new additions started appearing in our district-wide Defense Calendar. This was the place where schools added their defense schedules so panelists could then sign up to participate. Was it possible that despite the pandemic's challenges, and the fact that we'd only launched this new initiative a little over a year before, our district community had seen enough value to keep it going, even when it wasn't required? They had. Not all—but many. This seemed significant.

The students were amazing (and no doubt, thanks to amazing teachers who'd helped them prepare.) They had been learning about presenting virtually right alongside their teachers. They could share their screens and move between slides and videos with ease. Interestingly, the quality of the defenses seemed even better than before. Students had much to say and really good artifacts to share. They'd had to be creative—we saw more artifacts resulting from spending more time at home.

Some talked about cooking. Others talked about working and helping to support their families. They talked about helping younger siblings with their on-line classes. They didn't have the traditional academic measures to discuss as many often did that first year—MAP and even the ACT hadn't been administered. But they found new ways to represent their growth and goals. The virtual context required students to be more independent, and their defenses were better because of it. Those were truly some of the very best— and I was even joined by world renowned educational scholar and leader, Michael Fullan, as well as Justin Wells from Envision Learning Partners (both instrumental in the development of our work) for a few defenses during that virtual time. I couldn't have been more proud.

Part 4: Outcomes and Reflections

Outcomes. So Far.

There is still a long way to go in the district before the school experience is truly transformed for every student, but we made progress. Just in May, we, as a group of district leaders, revisited The New Normal, the Quality Work protocol and descriptors, the Performance Outcomes, and looked closely at school defense rubrics to see how they compared to the expectations outlined in those original documents. It was refreshing to again focus on the bigger vision for the kind of learning experiences we wanted for our students.

So far, we mainly have qualitative data to support the impact of the Backpack on student learning. However after five years, with three being heavily impacted by the pandemic, I can say this about our district of almost 100,000 students:

We know our students like never before. Defenses helped us to realize we were missing out on many of our students' interests and special talents. Some schools have made new efforts to get to know students much more personally long before they are ready to transition.

We realize our students can do more than we imagined possible—and many need less direction than we had been providing. We have to give them opportunities to solve problems, create and collaborate if we want them to learn. Having to figure out how to represent their learning and growth in new ways was a new challenge for our students, and they did it in ways the adults might never have considered.

We are talking about "evidence of learning" beyond test scores. It's so important that everyone understands that the word "data" just means information. It is not a synonym for score. We miss out on such important details about our students when we only consider numbers.

We are allowing our students to show what they know in many ways. It's so important that we consider which standards and skills can be measured in a more traditional way and which need a "driver's test," or performance assessment.

We are using a shared definition of Quality Work across the district.

We are thinking about Bloom's Taxonomy as a web instead of a ladder. (Mehta, 2018).

We are finding powerful implications for professional learning needs through the artifacts students share during defenses.

We are investing in new ways, like what the Modern Classroom Project suggests, to structure classroom time for students, teachers and space to provide a much better chance for teachers to be able to personalize learning, and make time for the kind of deeper learning experiences we are striving for.

We are investing in professional learning that immerses teachers in the kind of competency-based experience we want for our kids—and we are providing ways for teachers to be credentialed and recognized for this work.

Through our statewide Laboratories of Learning initiative, we are starting work to create a competency-based path that will allow students to credential

learning that happens outside of the school day and school walls.

Reflections

I am not sure I even fully realize yet the learning that has occurred for me over the last five years. I am forever grateful to the superintendent who invited me to join him for this journey, and cannot say enough about the many people who came together over and over again to do the impossible.

There are a few learnings that really stand out.

There are times when not knowing and understanding the full scope of your context is a gift. This allows you, as a leader, to make bold moves without considering the complexities of the system or community that might get in the way.

Beginning by establishing, collaboratively, what kinds of outcomes you want for your students—and the knowledge and skills they will need to achieve those outcomes—provides a firm foundation on which to build. I didn't know what a graduate profile was when we were trying to determine what we wanted our diploma to mean in Danville. It just made sense to start with what we wanted to achieve and then to build the system and experiences most likely to lead to those outcomes. There are certainly other ways to dive into deeper learning, but I haven't found another that provides such a foundation and a springboard both in a small, rural district and a very large urban one. This also goes a long way with establishing the why.

Worth repeating many times over—students are capable of far more than we often give them the opportunity to do. So are teachers.

You can't overestimate the power of spotlighting the kind of work you want to see. The creator feels motivated to do more and many who see it are inspired to try.

It is so important to help others see what school can be. The experiences I had at High Tech High and in the iSchool in New York changed my entire view of what school could (and should!) look like. There was nothing like seeing kids—who looked just like my kids in Kentucky—completely engaged in work that really mattered to them. I am constantly thinking about how I can recreate this experience for those I lead.

As teachers, my guess is that most of us went into teaching to create awesome learning experiences for kids—to inspire passion and curiosity. High stakes accountability as we have known it over the last several years causes both teachers and leaders to be fearful of trying anything that takes them too far from the norm. I have been in the room when the state department of

education says to a principal, "You were found through the audit not to have capacity to lead the work that needs to happen in this school." The fear is very real—and rooted in reality.

Deeper learning can be a game changer for students in high poverty, urban areas. However, it's those schools where the threat of consequences due to poor performance on traditional academic measures cause the most anxiety.

Even those who are not educators can come up with a general deeper learning experience—and without one day of PBL training. Although this is certainly needed to really refine the experience, it seems that we know intuitively how to create engaging experiences. It's the way we naturally learn.

I've realized we don't approach learning the way we do in school in any other context. If you've ever coached a team or taught someone to play an instrument, bake a cake, or do any other kind of real-life thing, we teach by doing. We naturally describe what to do, show and then ask the learner to try. We give them specific feedback until they get it right. The goal is success, and we work at it with them until it happens.

Can you imagine approaching one of those activities as we do in school? It seems completely absurd to think about teaching someone to ride a horse by first introducing vocabulary, then having them read about riding horses, then having them do research about horses and reporting to the class and even drawing pictures of horses with the goal of maybe, after the unit test, taking them to see a real horse. (Riding would be out of the question!) This is laughable—yet this is how we often structure learning in school. We can't wonder why students aren't engaged.

And, using that same example, there would be some students whose families could give them the real life experience of riding a horse. But many could not. So again, the students who probably most need the experience are not getting it.

We have to continually work to connect the dots with what we are asking our educators to do. There is nothing more frustrating than feeling like you are being tasked with a list of seemingly unrelated "to dos." We have to be coherent in our messaging—and we have to be clear about what we mean by deeper learning, competency-based education, personalized learning…the list goes on. It is so important to clearly define the terms we use. Otherwise, anything goes.

Finally, I am positive of this—if leaders in a district aren't continually steadfast and intentional about transforming the school experience and aggressively moving forward, the progress we made will be lost. Some schools will continue, at least with the Backpack and defenses, but those

who still see this as something extra and not a component of an entirely different approach, will stop. The district will still be ahead of where we were—individual teachers, leaders and schools will build on what they've learned and continue to evolve, but the system as a whole will not.

In the bigger picture, I have to believe our work has made a significant contribution to the field. It is difficult to disrupt and impact practice even in the smallest of school districts. We were able to make what I believe is significant progress toward the kind of school experience our students deserve. In a district of 100,000 students. During a global pandemic. Because of this, I am incredibly optimistic about what is possible.

Lots to think about. Lots of work left to be done.

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Putting Mental Health And Sewing At The Heart Of Humanities

Andres Perez
High Tech High Chula Vista, San Diego, CA

In the novel *I Am Not Your Perfect Mexican Daughter* by Erika Sanchez, the teenage protagonist, Julia, faces a mental health crisis. Coming of age in modern-day Chicago, Julia, the daughter of undocumented immigrants, also grapples with poverty, racism, and normal teenage problems. She is also like many of the students I teach at my high school, which is why I teach it every year.

At one point in the book, Julia harms herself. When we approach this moment in my class I warn my students and give them space to read at their own pace. I also provide the option to skip the section or engage in an alternative activity. Some students read alone, others in pairs, some read outside in the sun. Afterwards, we reflect. We refrain from judgment and instead discuss the context that led to the moment. We review best practices if something like this ever happened to a loved one. What do we say? Who do we tell? Students' most overwhelming reaction, in the end, is gratitude. They start to share their own battles with anxiety or depression. And then they all reflect on how these topics are rarely talked about in schools.

But then the unit ends. We normally move on to the next book, or next topic, or next subject. As is common, we spend time discussing a problem but take little action to address it. What if we started from a place that was user-centered and problem specific? What if we could actually do something

for Julia? Or, at the very least for someone like her? Last year, in my class, we chose to find out. We attempted to address the teenage mental health crisis—while studying the skills and content of an English and 11th grade U.S. History course along the way.

But before we could even begin, I had to evaluate the systematic issues present in our youth mental health system, and dream up a project that might address it. Most importantly, I had to consider who I could collaborate with to make it all happen.

Finding a Single Thread

Before the school year began, my student teacher, Dr. Jennifer Wilson, and I decided we wanted students to build something physical that might address mental health. After a year spent learning on computers we felt the way to activate students' minds, and support their hearts, was by starting with their hands.

I met Dr. Wilson at her son's little league game, and we brainstormed under the shade of a large eucalyptus tree. Between the clangs of the metal bat and cheers from the stands, we discussed our audience. Who exactly did we want to make something for? I had a connection to the local adolescent psychiatric hospital and they were open to a partnership, but what kind of product might be meaningful to them?

At one point Dr. Wilson mentioned the role sewing played in her life–a skill gifted from her mother, that she now used as a form of self-care and recreation. And like that, we had it.

Our students would learn to sew! We would make bags for the adolescent psychiatric ward and fill these "totes of hopes" with "notes of hope." The bags would serve as a kind reminder for anyone going through a hard time that they were not alone. We shared the idea with psychiatrists at the hospital to gain their perspective, and they agreed about its potential impact.

But before we put needle to thread we wanted to make sure that the mental health system and sewing were authentically linked so our students could engage with a cohesive curriculum. We wanted the tote bags to feel like the heart of the project in a practical sense, but also an academic one. As Dr. Wilson and I began to brainstorm content, we soon realized the connections between sewing and mental health were as long as a spool of thread.

We first shared with our students that the act of sewing itself is an opportunity to practice mindfulness and reach a state of flow. Research shows that mindfulness activities can reduce students' stress and negative emotions (Tatter, 2019). At a time when the whole education world was

discussing learning loss and the need for accelerated learning, we wanted our students to slow down. If we were going to study mental health, we needed to practice it as well.

We also recognized that sewing has traditionally been labeled as a gendered activity, and our project opened the door for potentially problematic assumptions about who sews and who doesn't. As a class, we examined traditional images of women sewing and discussed the men in modern society who broke down these stereotypes. Soon, our male students became some of our most excited sewists. Many of them had prior experience as well, and we made sure to put them in leadership roles from the start. A lot of high school anxiety comes from feeling you can't be yourself. We intentionally tried to create a space where you could be whoever you wanted.

And as we went deeper into the subject, we realized the way thread is used today is tied up in unfair labor practices and environmental malpractice. So students discussed the Chinese Garment Workers strike of 1982 and Greta Thunberg's argument against fast fashion. We studied the history of cotton, and how its early production in the United States was inextricably tied to chattel slavery and the oppression of African Americans.

These issues and others impact our students' mental health from a macro level. Students read how gun and immigration policies could all impact a person's mental health—and how it could be changed.

We realized the meat of the project was students giving something authentic to someone else. But at the same time, we didn't want students to walk away believing mental health problems could be solved with something as simple as a bag. So students wrote letters to the fashion industry demanding them to change their practices. Students spoke on panels about how schools needed systematic change in order to improve their mental health services.

As students grappled with the macro issues at play, their sewing took on new meaning to them. They really began to understand the importance of gifting a bag, but also its limits in addressing the whole issue. They also learned that solving large problems—much like sewing—takes time and continuous improvement.

Making Each Week Better

The project excited me, but it also scared me. What if the topic of mental health bored students? Or offended a parent? How would we read a book and sew simultaneously? To succeed I knew I would need to give myself lots of grace. The project didn't need to be perfect the first day, but I would need to commit to making it better each week.

And there were plenty of opportunities to get better. I surveyed my students many times about their skill level with sewing and about their own well being. I also surveyed students to learn how much voice they felt they had in the classroom. Adapted from a survey by the educational research organization PERTS, the results provided me with data on how much ownership students felt in the classroom. The data helped as I attempted to co-create the project with students. After lessons, I would also conduct empathy interviews and focus groups with students, seeking their opinion on what went well and what could be improved. Using the data, I would then identify strategies for improvement.

The students and I found a problem with our process early on. At the beginning of sewing lessons, we would have 12 machines plugged in at once. The room was a cacophony of whirring and snipping. At the end of these sessions I learned that many students didn't get much time at the machines, and felt like their sewing skills weren't progressing. Not only were we not on track to achieve our goal of gifting tote bags to the hospital, but my students were feeling stressed—far from the mindful vibe we were attempting to create. From this feedback, Dr. Wilson and I implemented a change idea to improve the lack of sewing time students received and moved to a small group format. While some students sewed, the other students read our class novel about mental health. From this shift, students' sewing times increased and engagement improved.

Where's the Emergency Red Backpack for Mental Health?

In October 2021, the American Academy of Pediatrics (AAP), the American Academy of Child and Adolescent Psychiatry (AACAP), and the Children's Hospital Association (CHA) declared a National State of Emergency in Children's Mental Health. But my students didn't need these statistics in order to become immediately engaged. They shared second-hand stories about family members or friends who had faced similar struggles. Some students even bravely opened up about their own challenges.

One of the rules for field trips at my school is to bring a red backpack full of first aid materials: band-aids, gauze, water, masks, gloves, and more. But there's nothing inside this bag to support students with psychiatric emergencies. Twice in my career, I've had students experience panic attacks on a field trip. In these circumstances, it usually comes down to adults, and in some cases student's peers, who can talk the student through their anxiety. The red backpack is just one example of how schools were structured to attend to students' physical health. Meanwhile, we're still trying to catch up to support students' mental health.

Although our project didn't solve the entire issue, I admired how my students were excited to scale our work. After the project was completed, myself and

two of my students were invited to present our project at several conferences focused on continuous improvement and project based learning. We shared many of the approaches discussed in this article.

The students spoke of the importance of understanding an issue before trying to address it. They talked about partnering with others, such as the children's hospital, in order to focus efforts. They even laughed, reminiscing about the sewing mistakes along the way.

I explained how using data helped me better understand my student's progress, and plan next steps. I also explained how important it was to normalize mistakes, study them, and grow from them.

I also spoke with other teachers about giving yourself grace—something my students I asked practiced throughout this project. Accepting grace for oneself didn't just aid us when machines broke or seams ripped, but any time our personal lives got hard. It was a reminder that being kind to yourself during challenging times was critical to getting through them. In a project about mental health, no lesson was more important.

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Cynthia Brown from the Pauma Band of Luiseño Mission Indians meets students from High Tech Elementary North County after a performance of the jingle dress dance.

Project Cards

Teachers and Students
High Tech High Schools
and other Innovative Schools

Project Cards provide quick glimpses of inspiring projects designed by teachers and realized in collaboration with students.

*Our full collection of Project Cards is available to download for free on our website, **hthunboxed.org***

everything.
— Eleanor

Reading is my favorite thing to do in my free time and just in general. It helps me learn new perspectives and escape into a new world. I can feel how others feel, see what others see and learn what people imagine.
— Cyrus

$$i\hbar \frac{\partial}{\partial t}\Psi = \hat{H}\Psi$$

ME, MYSELF AND I.
— Lily

Ingrained in my memory is a picture of my 6-month year old self standing on a surfboard. All my life I have been drawn to the water. This will never change.
— Kai

Bento
Charlie Linnik
Maker
Eighth Grade
High Tech Middle Mesa

For "The Bento Project," student artists focused on an important message they wanted to pass on to others. They used a combination of words and images to express themselves through their experiences, passions, past memories, adventures, beliefs, sayings, dreams and more!

Inspiration for the design of this project was drawn from abstract artists like Mondrian and Torres-Garcia, linear and series art, graphic novels and the Japanese artistic food presentation—Bento. Each art piece entails separate images that come together as one united piece.

Teacher Reflection

As a student in the HTH GSE, I discovered a new confidence in myself through speaking out and sharing my ideas. Since then, the courage I developed through my experience has only continued to grow. Now I want my students to develop that same courage and to use the arts as a way to help share who they are and what they want to say to the world.

My students and I were very impressed with how the Bento project came together. We learned a variety of new art skills and techniques and most importantly learned so much about ourselves and one another. We were proud to share our personal ideas and in a creative way. The opportunities for student choice within this project were truly engaging and motivating, and made it easy for students to share what they were thinking and create truly unique art pieces with personal meaning.

—Charlie Linnik

Student Reflection

I really liked looking for art resources because it's cool to change them and add your own style—even though they help guide you. I also enjoy messing around with the watercolor and getting different painting stylesand effects with it.

—Kayla N

I practice art a lot. It is my hobby. With this project, I found shading and inking with the fine-point blackpen challenging. It helped push my skills. I also found that the monochromatic watercolor process wasfun to do.

—Ash L.

Cruisin' Into Revolution
Celina Rodriguez
Tenth Grade
High Tech High Chula Vista

In the first part of this project, students studied the history of San Diego through the history of lowriders, combining desk research, visits from guest speakers, and field work in the local community. From this research, students made zines about specific aspects of lowrider culture.

In the second part, every student became an expert on a specific history topic and created a model car that combined timelines, images of key people, quotations and QR codes linking to relevant resources, so the cars themselves became teaching tools.

Finally, each student exhibited their learning to another class of students, using their car as an instructional aid.

Teacher Reflection
Studying this topic in the classroom has been the single most unifying force among my students every year. Aside from learning the history of our rich bi-national community, studying lowrider culture allows students to explore themes of identity and belonging, cultural heritage, advocacy, immigration, personal expression, family, citizenship, stereotypes & assumptions, community, language, intergenerational legacies and reciprocal relationships. Additionally, it gives us the opportunity to hear authentic community voices via lowrider guests speakers that we welcome into the classroom, allowing students to engage with the deep knowledge of elders in our community. Students are able to look critically at their own assumptions and stereotypes, and critically examine the prejudices held within their own families and communities.

—Celina Rodriguez

Student Reflection
I appreciated and felt inspired when [guest speaker] Mr. Rigo said that one of his most important moments in his life was realizing and identifying as Chicano. That finding an identity and community from that made you stronger. I can relate to the affirming and good feeling of finding a community and solidarity with people that share similar identities, interests, and experiences as you. I'm glad I got to hear him talk about it. I still struggle with what identities I really feel connected to, but hearing that he felt the same, and worked to create a safe environment for yourself and others makes me very happy. Thank you for teaching us about epistemology. Learning that truth comes from our community will guide me in the future. It reminds me that our communities give us strength.

—Alora

FOOD for THOUGHT

A MAGAZINE ABOUT FOOD SYSTEMS BY KIDS, FOR KIDS

Food Systems 101
How food gets to your plate!

Food Justice:
Are our food systems fair?

Plants & Bugs
Where all food begins.

WASTED FOOD:
Where does it go?

What **food choices** *do you make?*

Articles Written and Researched by the Fourth Graders of Room 235   Festival del Sol 2016

unboxed

Food For Thought
Amanda Borow
Fourth Grade
High Tech Elementary Chula Vista

The essential question for this project was "Where does our food come from?"

The project began by filling an entire wall with questions about food, then students categorized the questions and used them as a basis for research.

They learned about different types of food systems, and the people who are important in growing their food. They also explored what happens to food after leaves your plate and goes to a landfill. As part of this, students visited local farms and the local landfill, and had visits from local chefs who taught them cooking techniques. They also visited the school's new catering service.

Students shared their research in a magazine, *Food For Thought: A Magazine about Food Systems By Kids, For Kids*. One of the articles was later reprinted in a local San Diego food magazine!

Teacher Reflection
It was powerful to do a project focused on a topic that impacts the students everyday and they had not had the opportunity to dig into before. When I was doing research for the project I couldn't find any good articles for kids about food systems at a fourth grade reading level. That's where the idea of making a magazine came from. One powerful part was early on in the project when we covered the back wall in sticky notes with our questions about food. There were so many different topics we could explore and write about! If I could change anything about the project it would have been to do it as a year-long theme rather than a trimester project. It was challenging to fit in an exploration of food systems and then also have the time to create the product. If it was over the course of a year it would allow for a lot more depth of engagement with each aspect of food systems.

—Amanda Borow

Student Reflection
I learned that food access is when you have good, healthy food. Food insecurity is when people can't get access to healthy food.

—Xander

I learned that farmworkers fight for their rights. They get sick a lot because they are getting sprayed by pesticides.

—Pablo

Off Beat Music Festical
Oscar Carrion and Mary Wolfrey
Ninth Grade Humanities and Physics
High Tech High

Students designed, planned, performed in, and produced a music festival at Liberty Station in San Diego, CA, attended by approximately 200 people, including students, families, educators, peers, and community members. Students took on roles modeled after relevant jobs, including creative directors, event planners, marketing, food services, talent booking, stage crew, box office sales and management, and documentarians. The festival included local musical acts and food trucks that were booked by students—and the students in our classes performed, as well.

In addition to designing and producing the event, the students were assigned to play and practice with student bands according to their music tastes and instrument preferences. They learned their instrument (guitar, bass, drums, or keyboard) and performed cover songs of their choice with their bands. Students also wrote "Genius Lyric" style songs in their humanities class reflecting on Africa's vibrant culture and history, and how it was affected by European imperialism.

Teacher Reflection

This project turned out to be more transformative than I anticipated. The relationships that grew within the bands and team in the process of putting on this music festival was the true gem of this project, on top of the shift in mindsets of what they are capable of doing. In this iteration, students only performed covers, and in the following iteration I will have them perform their original songs.

—*Oscar Carrion*

Student Reflections

"This project gave me a reason to want to come to school."

"Music taught me that you can't cheat your way."

"Music helped me improve my work ethic and become more patient."

"This project has made me more open minded, empathetic, and a lot happier."

"It's allowed me to connect with a group of individuals, my band. We've learned to play, and play with each other."

"Because I gave myself a chance and I believed in myself and that brought me closer to my community."

Butterfly   **4HP**

Size: 5 in

Fly
to gain health points.   **2**

Dots:
gain a point to be safe   **1**

Tiger   **200 HP**

Size: 6ft

Bite
It puts its jaws on the enemy   **90**

Claws Out
It rips through the skin of the enemy   **150**

ANIMON
Gigi Neidiffer, Connie Tosaya & Nicole Ramirez
Third Grade
High Tech Elementary North County

In this project students created a deck of "Pokémon"-inspired cards about animals of their choice, focusing on the specific characteristics and adaptations that allow their animal to survive in their environment. The cards were designed so they could actually be played against each other in pokémon-style games! To research their animals, students worked with the San Diego Zoo, and read non-fiction texts (most notably the "Who Would Win?" book series). In addition to creating the ANIMON card, students wrote an informational essay and created a "chant" for their animal to be used during game play to raise morale. Animon was co-designed and led by two 11th grade interns from High Tech High North County, Audra 'Alex' Gomez and Jessica Ramirez Cruz.

Teacher Reflection
My teaching partners and I noticed that our students LOVED playing Pokémon... So we decided to harness that and create our own kind of Pokémon cards.

I learned that in order to make teaching and learning meaningful you have to take what the students really like and turn that into something that allows students to develop core academic skills. Once we realized how much our students like animals and harnessed that, they were excited to learn more, and that's what makes the learning engaging!

We worked so long and hard on it, and they put so much effort into it, and exhibition felt like a celebration of all we'd achieved together! To this day it is my favorite project because the students made it meaningful and impactful to our community.

—*Gigi Neidiffer*

Student Reflection
I took a lot of time on drawing my animal so I wouldn't get in a rush and get frustrated. It was good being able to show the parents what we worked on in the project.

—*Ryan*

I thought it was really cool that I was able to choose a tiger because that's one of my favorite wild animals, and it's just super fun to be able to learn about one of my favorite animals. This was the most fun exhibition we did.

—*Kennedy*

Teacher-Student Diversity Gap

Grace Libby, Alexandria Echevarria

Teacher-Student diversity gap means when school have a large amount of teachers that do not look like there students. The reality is, the majority of the teachers are white but majority of the students are mostly non-white. With that being said there are about 80% of **white teachers** in schools and steadily increasing, while more than half of the students are non white and they predict that there will be more coming in the future. In Wake County only 3% out of **11,000 teachers** were black men. When jobs open up the thought of becoming a teacher is less of a idea to people of color, so that is the reason that majority of the teachers are white. This problem isn't in the past it is still a problem today.

Study shows that when **non-white students** had a **teacher** that looked like them by third grade they are 13% more likely to apply for college. If they had two they would be 32% more likely to apply for college. The reason why they are more likely to apply, is because they will have a role model that looks like them so they will believe that they can do great things!

Some people will call this a minority gap this is an **outdated term minority** means "A racial/ ethnic minority is a person whose race or ethnicity is a non-dominant race within the group. In the United States, racial/ethnic minorities are generally considered to include Hispanic/Latinos, African Americans, Asians, Native Americans, Hawaiian/Pacific Islanders, and those of two or more races." It is outdated because it is supporting the fact that if you are not part of the dominant culture you are less then.

Orange is the amount of how many people of color there are.

How many of the teachers/students are white vs. non-white
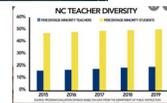
Teacher student diversity over the the past 5 years

Grace Libby's Reflection
We can practice anti-racism in this area by trying not to stereotype non-white students. So don't assume that they're less smart than you or bad people because they don't look like you.

Alexandria Echevarria Reflection
We can paracles anti-racism in this area by showing the younger generation that the world has a mix of different races and ethnicities. It also shows kids that other people who look like them can do the things that they want to do.

(In)equity By Design
Vanessa Medellin, Shelby Sember & Matt Chapman
Sixth Grade
High Tech Middle North County

In this project, students investigated the U.S. education system to answer the question: "Is the education system broken?" Initially students explored what it means to be genetically human, how similar we are and what makes up our differences. Students took their own phenotype data and compared it between the class, school and community data sets.

Students then explored different "flashpoints" throughout the history of US Education to provide a social and political context of that data, while they also analyzed and graphed current educational outcome data (SAT scores, rates of disciplinary actions, teacher-student diversity gaps, graduation rates) to recognize patterns across racial groups and social class. Students interviewed people in our community about their experiences in the US education system, which culminated in recording a set of podcasts. These podcasts were curated in a life-size shoebox museum built by students called "Walk in our Shoes" where guests would wear the actual shoes of the storyteller while walking and listening to their stories. The goal for this project was for students to understand the way in which social structures and institutions can impact the lives of individuals. Specifically, how racism and other discrimination has played a role in the formation of our education system which has been designed to create different outcomes for different people.

Teacher Reflection
While doing this project, we had to become comfortable with having difficult racial and social construct conversations with students. Listening to the audiobook, *Stamped* by Dr. Ibram X. Kendi helped us form a common knowledge and grounded our conversations. The outcome we are most proud of is that students were able to discuss racism and other forms of disrimination in a productive and reflective way, both in our classroom, as well as with our community partners.

—Shelby Sember & Matt Chapman

Student Reflection
In this project I appreciated that we were able to connect to things that are happening now in education. I also think it was really important that we got to hear first-hand experiences by interviewing people in our community. In our interviews we were able to make an emotional connection to how the education system impacts people and sometimes causes harm. One thing that will always stay with me is the data we analyzed in math because I realized how important it is to have teachers who look like you and have similar experiences as you.

—Alexandra

CALIFORNIA INNOCENCE PROJECT
XONR8

unboxed

The Innocence Project
Mackenzie King, Biology, High Tech High Chula Vista
Peter Jana, Humanities, High Tech High
Margaret Egler, Humanities, High Tech High
Jesse Wade-Robinson, Biology, High Tech High

Students partnered with the California Innocence Project (CIP), headquartered at the California Western School of Law to review case files of currently incarcerated individuals. Students review legal records, DNA evidence, and letters written by prisoners who claim to have been wrongly convicted—they may even debunk junk science that was presented in court. Students then recommend a course of action by writing interoffice legal memos for CIP lawyers and law students. In the culminating exhibition, students made their presentations to the CIP, which helps determine which cases are reopened in court.

Mackenzie King designed and launched this project at High Tech High Chula Vista. In 2017 Humanities teacher Peter Jana brought this project to the Gary & Jerri Ann Jacobs High Tech High, and in the 2021–2022 school year, humanities teacher Margaret Egler and biology teacher Jesse Wade-Robinson adapted it, adding the collaborative mural featured on this project card.

Student Reflection
My interest in law began with the California Innocence Project. We essentially decided whether the appellant was right in sending letters to the California Innocence Project, or whether we believed they were truly guilty. This inspired me to apply for an internship in the Carter Keep Courthouse in downtown San Diego, which gave me the opportunity to observe multiple trials, hearings, and sentencings. I studied the way the court room functioned and even the mannerisms and language used by the lawyers and the judge. The experience helped me greatly in pursuing a career in the field of law, and it all stemmed from the California Innocence Project.

—*Emmanuel G.*

The Innocence Project was the first school project I had been a part of where showing other people my assignments was illegal. The cases can get very ugly, even more so because the project deliverable's quality may impact the course of someone's life. The responsibilities of the project can be extremely difficult, intellectually and emotionally. At the same time, the Innocence Project gives students a chance to help bring someone justice.

—*Rigel B.*

Streetlights
Chris Mutter, Multimedia
Sabrina Salvatierra, Math
Jesus Carillo, Humanities
Tenth Grade
High Tech High International

Students worked in small groups to design a unique lamp that represents a neighborhood in San Diego. In Hum, each student researched the history and culture of their selected neighborhood. In Math, they found demographics of statistical importance to visually represent in their lamps. In multimedia, designed a lamp that visually and symbolically represented. After the school wide exhibition, The lamps then were permanently displayed within the neighborhoods in businesses, restaurants, libraries and community centers.

Essential questions from the project were:
•   What makes a lamp a lamp?
•   What makes each neighborhood unique?

Teacher Reflection

We decided that we wanted our students to research the different neighborhoods of San Diego county and create lamps to represent them. It was amazing to see how unique many of these neighborhoods were along with all of the special connections that our students had with them as well.

We wanted to make sure that certain neighborhoods were represented while not having any duplicates of neighborhoods. We additionally had to set up deadlines so that we could manage the bottleneck of production at the 3D printer and laser cutter. Being transparent with students about our expectations and letting them know how long things actually took to produce really made a difference in getting them to follow the timelines.

Student Reflections

I was born and raised in Ocean Beach and wanted to create an homage my hometown. We learned how to use Illustrator to create the design of the lamps. I represented the Ocean Beach logo by mastering the shapes tool. It was a repetitive process but necessary to design a detailed image. Finally we sent the design to the laser cutter and then we assembled our lamps. After we showed the lamps at our exhibition, I went to OB to find a home for the lamp. It felt really nice to find a home at Hodad's (a local burger restaurant) because I used to go there as a kid.

—Taya

Swimming Against the Current:
Resisting White Dominant Culture in Improvement

Amanda J. Meyer
Independent Improvement Advisor

Education organizations practicing continuous improvement[1] are increasingly naming equity[2] as the purpose for their improvement efforts. At the same time, equity advocates are taking up continuous improvement because they see how these methods can help people move from critical conversation into concrete action. While continuous improvement was originally codified and practiced in industry (most famously auto manufacturing) without equity as an explicit goal, there are good reasons to be optimistic about improvement as a lever for equity. First, continuous improvement was originally based on values that align well with equity in action: respecting every worker and customer; recognizing the complexity of systems; seeking root causes; reducing variation in performance; finding joy in the work, and unleashing people at all levels of a system to make the world around them better (Imai 1986). In addition, improvement practices such as engaging user voice, collaboratively making meaning of data, and running structured reflection cycles provide a shared, disciplined approach for equity work in institutions. And of course, at its heart, improvement is about replicating high-quality outcomes, every day, for everyone—which sounds a lot like many folks' vision for a more equitable education system (Bryk et al. 2015).

However, despite an increasing number of organizations who are attempting to practice equity-centered improvement, a common critique is that our

equity practices feel separate and insufficient. For example, we might run a Plan-Do-Study-Act cycle and then afterwards do an "equity pause" to illuminate all the ways we didn't attend to equity in our cycle. We might reflect on how our social identities shape our perceptions, and then build a fishbone diagram that reflects only our own views. We might interview people most impacted by the problem, and then design a change idea without them. We might set aims centering students least well-served, and then fail to meaningfully unpack disproportionalities in our data. This lack of successful integration of equity values into daily improvement practice has resulted in continuous improvement sometimes being perceived as mechanistic, overly-technical, and a means to tinker around the edges of the status quo rather than to transform it (Safir & Dugan 2021).

If so many people believe that continuous improvement has potential to be leveraged for equity, why does our practice often fall short of our aspirations? One reason is that many improvement organizations are promoting equity, but our improvement practice still often reflects the same old ways of working that we have always known. What if, instead of focusing on the equity practices we think we should be adding to our improvement repertoire, we also considered what forces may be pulling us away from living our equity values in every day practice?

White Dominant Culture: The Ocean We Swim In

A major impediment to integrating improvement and equity is the dominant culture within which we work. In the United States, those who have typically held power in our society have been wealthy, European, Christian cis-gendered men. Over time, as those holding wealth and power became racialized as "white," whiteness became a tool to continue conferring unearned advantage on those perceived as white. Their norms, values, structures and ways of being became perceived as "superior," creating a culture in our institutions that can be referred to as white dominant culture[3] (Okun 2021). White dominant culture creates policies, practices, and norms that serve to uphold interlocking systems of oppression, including racism, patriarchy, heterosexism, classism, ableism, and others.

Seeing and naming the harmful dynamics of white dominant culture is a critical step towards reducing their influence. The article, "White Supremacy Culture," written by white anti-racist educator Tema Okun with the mentorship of Kenneth Jones and many other colleagues of color, is the most widely-cited framework laying out the impacts of white dominant culture on organizations.[4] It is also one of the more controversial articles under discussion during our current national reckoning with racism (McGlone 2020). Despite the skepticism the piece has faced, it has been returned to repeatedly in conversations about race over more than two decades because it captures a lot about the lived experiences of those furthest from power.

White dominant culture gives us a frame to look at ourselves and our organizations in new ways. In this article, we use this frame to explore how cultural values we take for granted may limit the potential of improvement work to create greater equity. However, this article will not provide a thorough introduction to white dominant culture, and readers are encouraged to delve into Okun's work to ensure they understand the nuances of this often-misunderstood and (sometimes intentionally) mis-represented framework.

Continuous Improvement and White Dominant Culture: Doubts and Potential

About eight years ago, I began to learn about white dominant culture and the exclusionary dynamics it can create in organizations. As a person socialized as white in America, much of this information was, sadly but not surprisingly, new to me. The more skilled I became at perceiving white dominant culture, the more I could recognize how my own thoughts and behaviors perpetuate it. I saw how my own perfectionist tendencies led me to prioritize the products of my work over the experience of those who had to work with me. My focus on my individual vision of excellence reduced my openness to others' ideas and ways of expressing their thinking. My relationships suffered, and even if I hadn't seen it at the time, so ultimately did my work to support schools. I still struggle regularly to resist the perfectionism I have performed for many years.

I also came to recognize that continuous improvement originated in business and industry within a capitalistic, white-dominant economic system. I began to doubt that I would be able to square my training in improvement with my values of equity and justice. Could I hold an equity consciousness and continue practicing improvement? What would need to change about my improvement practice if I believed in deconstructing white dominant culture?

However, today I see both risks and opportunities. Continuous improvement can take many forms, but in the analysis here, I am referring to the methodology of improvement science[5] as I and others describe and practice it in the field of education. Many equity-minded improvers have rightly noted that the way many in education practice improvement science risks replicating power dynamics instead of interrupting them. Like any tool embedded in white dominant culture, improvement science will tend, by default, to be used in ways that perpetuate the status quo.

If white dominant culture is the ocean we swim in, there is no doubt it has a powerful current. I believe it is how we practice improvement science and enact its principles on a daily basis that determines the potential of our work to create greater equity. Without active resistance to the pull of white dominant culture, our improvement work will largely look like old ways of thinking, being, and working.

Swimming Against the Current: Resisting White Dominant Culture in Improvement Work

Learning to resist white dominant culture is like learning to swim in an ocean current. If you aren't actively swimming against it, you're being carried by it. Recognizing that is an important first step, but actually creating inclusive, equitable continuous improvement work will require conscious intention and constant action at individual and collective levels.

Fighting the current begins on the inside with doing personal work to understand the dynamics of white dominant culture in our own lives. Because seeing and naming these influences is a first step towards dismantling them, developing a personal reflective practice is an essential component of resisting white dominant culture.[6] White people can jump start a reflective practice through programs such as Layla Saad's phenomenal *Me and White Supremacy* (2020). Working through Saad's book multiple times in community with other white people has given me the awareness and vocabulary to describe the dynamics of white supremacy in my life and relationships, and sharpened my commitment to not repeat my past patterns. For people of all backgrounds, a personal reflective practice can be cultivated through journaling routines, facilitated racial affinity groups, or working with an equity coach.

Nevertheless, even if we create practices for ourselves that help us better detect and resist white dominant culture, we will still encounter the influences of white dominant culture in the larger organizations and systems we are working to change. This is why resisting white dominant culture is not something we can ever check off our to-do list. White dominant culture is so old and so all-encompassing that we will likely always be swimming against the current in our lifetimes. However, we can get better at how we swim! We can get more efficient in our strokes. Our muscles can grow stronger and the work of swimming against the current can become less effortful. But, until we have collectively created a different ocean, we will always be swimming.

The following table[7] describes common ways that white dominant culture can influence our improvement efforts and limit the impact of our work. The white dominant culture characteristics in the left hand column come directly from Tema Okun's article, "White Supremacy Culture–Still Here." Each characteristic of white dominant culture named below is presented alongside several examples of harmful patterns that can emerge in continuous improvement when we are not intentionally interrupting some of our ingrained ways of thinking, working, and being. Each characteristic is matched with moves that help resist old ways and reimagine our collaborative improvement work to be more equitable in process and results. While several possible moves are suggested here, these are simply examples offered to spark reflection and dialogue–our growing community of anti-racist educators, leaders, and continuous improvers will add to this list for years to come!

Perfectionism	
Harmful Patterns	**Moves to Resist and Reimagine**
Feeling pressure to implement something perfectly, whether it is a change idea or continuous improvement itself. Feeling that you need to do continuous improvement perfectly yourself before you can help others to do it. Believing that there is one best way to practice continuous improvement. Fearing failure so much that you keep the improvement work superficial and move through it quickly. Feeling so strongly that we need to meet our target that we don't set ambitious goals. Not being able to admit when targets aren't met, and not learning from times when we don't achieve improvement. Focusing more on identifying and analyzing all the ways we are falling short, rather than amplifying and replicating ways in which we are succeeding.	**Emphasize More Than One "Right" Way:** Remain open to a variety of tools and approaches for making meaning of systems and working to change them. Refrain from treating improvement is a linear or lock-step process. **Give Yourself Permission to Start Before You're Ready:** Be honest about where you are in your journey of learning about continuous improvement, and encourage others to do the same. There is a developmental trajectory for continuous improvement just like there is for any other complex set of knowledge and skills. **Look for Success:** Engage in bright spots analysis to identify strengths, assets, and pockets of success. Develop change ideas based on bright spots, not just breakdowns. **Publicly Celebrate Failure:** Normalize mistakes and appreciate failures as a part of learning. Emphasize that more is often learned from "failed" tests than ones where the expected results are achieved! When leaders share their failures, it becomes safe for others in the organization to do so as well. **Emphasize Grace and Compassion:** Encourage and model offering ourselves and others grace and compassion.

Sense of Urgency	
Harmful Patterns	**Moves to Resist and Reimagine**
Setting unrealistic targets, driven by accountability and fear, in which huge progress is expected in a short amount of time. Responding to accountability and fear by "playing it safe"and pursuing superficial rather than transformative goals given the short timeframe allowed. Letting our sense of urgency make us move faster than relationships, trust, and readiness allow. Rushing collaborative processes and underinvesting in relationship-building throughout. Acting "now, now, now" as opposed to intentionally pausing to think about what we are learning.	**Calendar the Time the Work Requires:** Allocate enough time for the depth of reflection, dialogue, and learning that continuous improvement requires. **Less is More:** Select a small number of specific targets and stay focused on those priorities. Narrow the number of different things we are asking ourselves and others to focus on at a given time. **See Improvement Aims as Predictions, Not Targets to be Evaluated By:** An aim is a prediction of results based on a theory of improvement. Not meeting our aim is not something to be ashamed of; it is a call to action to re-evaluate our theory or the degree to which we actually put changes into practice. **Find the Natural Consolidation Moments:** Identify where in our system we have natural opportunities to slow down and reflect. Leaders recognize those points in time and ask for it. **Start Small:** Even though this is one of the fundamental principles of continuous improvement, the pressure we are under can make it hard to resist the urge to go too big, too soon! Be the voice in the room that says, "How could we test this on a smaller scale?" This is not the opposite of urgency: starting smaller means learning faster.

Transactional Goals & Relationships	
Harmful Patterns	**Moves to Resist and Reimagine**
Rushing the improvement journey and treating continuous improvement activities as items to check off a list. Setting goals that are overly fixated on quantifiable factors, in a rush to get concrete results that can be reported quickly. Measuring only at the superficial or transactional level, such as participation rates rather than the quality of the participation *experience* for users. Using the reasoning that something is "hard to measure" as an excuse for not trying to capture it or get feedback about it.	**Push Deeper to Quality:** Attend not just to easily-measurable quantity, but actual quality. Push beyond the level of transactional to assess whether the experiences of those you are trying to impact have actually changed. **Redefine "Data":** Broaden your definition of data to include "street data," such as observation, anecdotes, and storytelling (Safir & Dugan 2021). Bring these forms of data regularly when investigating the current state or completing Plan-Do-Study-Act cycles. **Measure Experiences, Not Only Outcomes:** Articulate a clear vision for how you want the work to be experienced by all involved, and conduct regular checks on the process, not just the outcomes you are working towards.

Paternalism	
Harmful Patterns	**Moves to Resist and Reimagine**
Underestimating the value of co-creation and assuming you are qualified to solve problems for others. Using the excuse of limited resources or looming deadlines to shortchange stakeholder engagement. Deciding what you're going to do without engaging folks. Making a plan without the folks who are most impacted, or who will be operationalizing the plan.	**Let Those Most Impacted Lead:** Engage those most impacted as equal members of improvement work.[8] This could look like students, parents, or community members serving on your improvement team and following their lead as they determine the direction of the work (Hinnant-Crawford 2020). **Invest in One-to-Ones:** Engage in the practice of one-to-one conversations that provide ample space for perspectives to be shared and relationships built. **Let People Choose:** Allow teachers, leaders, or whoever is doing the improvement work to name the focus of their own inquiry.

Superiority of the Written Word	
Harmful Patterns	**Moves to Resist and Reimagine**
Overemphasizing written products or equating what is written down with what has been learned. Creating such stringent expectations for documentation that it overwhelms or disincentivizes people from doing the work of improvement. Equating continuous improvement with forms and templates, rather than reflection, dialogue, and learning. Overemphasizing jargon and technical language. Valuing ideas that are documented or packaged in a visually appealing way over the practical, experiential wisdom people are using in their work.	**Make Learning Explicit:** Help people see the ways they have already been engaged in continuous improvement thinking, even if they haven't written anything down. **Create Early Experiences Disconnected from the Written Word:** Disconnect PDSA cycles from the written word by inviting someone to try something and come back next week/month to reflect verbally. **Develop Approachable, Common Language:** Use approachable language that people are already familiar with, such as "small change cycles" or "inquiry," so that people don't feel excluded by language. Common, locally-meaningful language helps bring clarity, shared accountability, and understanding. **Conduct PDSAs Through Conversation:** Experiment with various formats to engage people in conversation about their testing cycles. Use a huddle structure to scaffold and pace testing cycles. Rather than asking everyone to come back with a write-up, ask them to join the meeting ready to share what they tried and what they learned.

Right to Comfort & Fear of Open Conflict	
Harmful Patterns	**Moves to Resist and Reimagine**
Assuming shared values around equity without unpacking what it truly means. Prioritizing harmony over challenging individual and shared beliefs. Being unable to hear criticism or receive feedback without feeling blamed. Blaming people of color for causing discomfort with their critique rather than considering the content of their observations. Investing more in technical skills than in relational skills, such as giving and receiving feedback effectively.	**Create the Conditions for Difficult Conversations:** Applying an equity lens to our improvement work necessitates honest dialogue. Racism, patriarchy, and other forms of oppression are so baked into our society that the very programs we design to interrupt inequities can perpetuate them just by how they operate. If we are not explicitly talking about how we are resisting oppression, we are likely perpetuating it. **Develop Listening Skills:** Support your team in growing their capacity for listening and sitting with discomfort. Incorporate opportunities for the release of emotion through speaking and listening—such as through open-ended prompts in a constructivist listening dyad.

Right to Comfort & Fear of Open Conflict	
(continued)	
Harmful Patterns	**Moves to Resist and Reimagine**
Assuming shared values around equity without unpacking what it truly means. Prioritizing harmony over challenging individual and shared beliefs. Being unable to hear criticism or receive feedback without feeling blamed. Blaming people of color for causing discomfort with their critique rather than considering the content of their observations. Investing more in technical skills than in relational skills, such as giving and receiving feedback effectively.	**Practice Emotional Regulation and Somatic Healing:** A great deal of harm in equity work is caused by defensive emotional reactions by people of advantaged identities, especially white people. To equip ourselves and our teams to lean into discomfort and have the conversations required to face inequity, we must work to understand our triggers, how threat response shows up in our bodies, and how to create space between emotional reaction and outward action.[9] **Create Intentional Moments for Pause and Follow-Through:** Grow your team's collective equity muscles through the practice of "equity pauses" that create windows to stop, reflect and re-set during group collaboration. However, take extra care that these pauses are used purposefully to shift the dynamics of a conversation and not as an after-thought to check the "we talked about equity today" box. **Leverage a 3rd Party Perspective:** Using tools such as equity audits or equity rubrics can provide outside criteria against which your team can evaluate its improvement efforts. The use of more objective descriptors can "de-personalize" areas of concern and can prevent an undue burden for raising equity concerns from being placed on particular team members.

One Right Way & Objectivity	
Harmful Patterns	**Moves to Resist and Reimagine**
Assumption that continuous improvement tools, protocols, and data make it possible to be truly objective when studying or addressing a problem. Falling into "solutionitis" or expecting we can find a single, quick fix for a complex issue. Talking about our theories as if we will discover one "truth" for how something works, or assuming that we will be able to discern a direct link between cause and effect. Lack of awareness that continuous improvement, though it involves strategic thinking and logic, is still susceptible to bias and influenced by emotion.	**Ask Questions:** "One right way" thinking represents a lack of the curiosity and humility that are integral to continuous improvement. Return consistently to asking and answering questions. **Look for Complexity, Not Truth:** Instead of looking for one answer, aim to discover and make visible the variety of factors that are inevitably at play when it comes to a particular inequity. **Dig Into the Data:** Use data as a vehicle for asking more questions and revealing more layers, rather than as a source of solutions. If a particular data display gives rise to more questions, seek out additional data. Be wary of summative statistics that could be hiding inequities beneath the surface (La Salle and Johnson 2019). **See it from Another Angle:** Recognize that everyone has a set of experiences that has shaped their worldview, including you! Inquire into the perspectives of others. Regularly identify whose voice has not been at the table and work to engage those people in the work.

Power Hoarding	
Harmful Patterns	**Moves to Resist and Reimagine**
Setting out to improve the work of other people. This can look like an improvement team formed to improve math teaching, composed of central office and school-site administration, without math teachers who are actually responsible for doing the teaching, or students who are responsible for doing the learning.	**Revisit Team Composition:** Don't be afraid to revisit an improvement team's composition regularly to see if changes or additions are needed. If at any moment, the conversation is about improving the work of someone else, not the work of those sitting around the table, that is a sign that we have a mismatch between problem and team composition.

Conclusion: Swimming Faster Together

This starter set of patterns and moves can help any individual consider the ways in which they might actively resist some of the most harmful manifestations of white dominant culture and return to the equity-aligned values at the heart of continuous improvement. However, a fish swimming against the current benefits from belonging to a school of fish swimming in the same direction. Swimming in formation allows fish to leverage each other's wake and increase their speed and efficiency. In this same way, any of us as individuals can actively resist white dominant culture, but our efforts will grow easier when we work in tandem with collaborators who hold the same values.

Some people express criticism towards continuous improvement, seeing the ways it has reflected white dominant culture in practice as reason to dismiss the entire methodology. In the spirit of Audre Lorde's critical comments at a 1979 feminist conference, they ask, "Can you really dismantle the master's house using the master's tools?" (Lorde 1984). However, Dr. Brandi Hinnant-Crawford, a scholar of educational justice and improvement who identifies as black and female, challenges that notion, asking in a recent podcast interview:

> Is it the master's tools if they're now in my hands? Or are they now my tools? (Hinnant-Crawford 2022)

Our practice of improvement can and must evolve, and critically applying the framework of white dominant culture can help us continue to make these tools our own. As we bring our equity-driven colleagues, teams, and organizations along with us, developing new habits and practices together will accelerate our ability to use continuous improvement to re-engineer oppressive systems and build the world we all want to live in.

Possible Questions for Discussion:
- Which of these harmful patterns of white dominant culture have you observed in your own continuous improvement work?
- Which moves to resist and reimagine have you leveraged? Which might you want to leverage in the future?
- What additional moves would you add to this starter list? What experiences are you drawing on as you identify your moves?
- What structures, supports, or resources do you think are necessary for improvement teams to consistently apply an anti-racist lens to their work?

Notes

1. "Continuous improvement" refers to a suite of methods used to create change in organizations and drive towards continually better outcomes. This article assumes the reader holds a basic familiarity with continuous improvement and its practice in education, although people at any stage of learning about improvement are welcome to engage with the ideas presented here! To read more about continuous improvement, take a look at the "further reading" section at the end of this article.

2. This article will not be exploring the concept of equity in a nuanced way, despite the fact that there is an ever growing range of interpretations and meanings as "equity" becomes more mainstream. Readers are encouraged to learn more about the various meanings and uses of the word, "equity." For the purposes of this piece, think of "equity" as referring to both 1) the state that would be achieved if how one fares in society were no longer predictable based on any identity or social factor, as well as 2) the practices that are leveraged to pursue that state.

3. Also may be referred to as "white supremacy culture." This article does not provide anything beyond basic introduction to white dominant/supremacy culture, and refers to characteristics that are explained in more depth in the original materials from Tema Okun and colleagues. Readers are encouraged to delve into additional resources on white supremacy and white supremacy culture to sharpen their ability to apply this lens to continuous improvement. To read more about white-dominant culture, take a look at the "further reading" section at the end of this article.

4. There is much more to know about white dominant culture than we could possibly explore in this article, and so readers with additional questions are encouraged to familiarize themselves with the original Okun piece, which you can find at https://www.whitesupremacyculture.info/

5. Improvement science is a particular methodology for continuous improvement originally championed in healthcare by the Institute for Healthcare Improvement, and popularized in education by the Carnegie Foundation for the Advancement of Teaching. Readers are encouraged to seek additional information about improvement science as needed.

6. Thanks to Jaime Kidd for reminding me of the importance of naming this aspect of the work, even when discussing the broader impacts on organizations!

7. The patterns and moves shared here have been compiled through conversation and collaboration with many valued colleagues, and are presented with particular gratitude to Enikia Ford-Morthel, Jill Hoogendyk,

and Eve Arbogast of San Francisco Unified School District (SFUSD), as well as David Montes de Oca of CORE Districts. The framework was originally presented at the 2022 Carnegie Summit in collaboration with these inspiring leaders from SFUSD.

8. More and more, improvement efforts are recognizing the importance of engaging students as designers and improvers of their own school experiences. You can find resources to help you with this in under "Designing with Students" in the "Further Reading" section at the end of the article.

9. Thanks to Iris Lopez for naming this work as critical to efforts to dismantle white dominant culture. I wholeheartedly agree.

Further Reading

White Dominant Culture

Okun, T. (2018). *(Divorcing) white supremacy culture.* https://www.whitesupremacyculture.info/

• A website created by Tema Okun expanding on the 1999 article in which Okun consolidated a set of widely-observed cultural characteristics.

Saad, L. (2020). *Me and white supremacy: Combat racism, change the world, and become a good ancestor.* Sourcebooks.

• A book offering a four-week reading and reflection guide to help people examine their white privilege and challenge their own participation in white supremacy.

National Museum of African American History and Culture. (n.d.). *Whiteness.* Smithsonian. https://nmaahc.si.edu/learn/talking-about-race/topics/whiteness

• A chapter in the self-guided, multimedia learning tool "Talking About Race" from the National Museum of African American History & Culture.

Improvement Science in Education

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• Accessible introductory essay for educators new to continuous improvement.

Bryk, A. S., Gomez, L. M., Grunow, A., & LeMahieu, P. G. (2017). *Learning to improve: How America's schools can get better at getting better.* Harvard Education Press.

- A seminal book introducing the ideas of improvement science to the education research and practice fields.

University of Michigan. *Improvement science in education.* EdX. https://www.edx.org/course/improvement-science-in-education

- A self-paced online course that covers much of the content of Learning to Improve.

Hinnant-Crawford, B. (2020). *Improvement science in education: A primer.* Myers Education Press.

- An introduction to improvement science with strong connections to equity, primarily written for education research graduate students.

Designing With Students

Bhakta, S. & Meza-Ehlert, E. How to codesign with students: A five-step guide by students for teachers. *Unboxed*, (23). https://hthunboxed.org/unboxed_posts/how-to-codesign-with-students-a-five-step-guide-by-students-for-teachers/

- A short guide written by two students with extensive experience in codesigning with teachers, school leaders, and researchers

Community Design Partners. *Student powered improvement.* https://studentpoweredimprovement.com/

- A collection of resources for educators.

Acknowledgments

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Lorde, A. (1984). The master's tools will never dismantle the master's house. *Sister outsider: essays and speeches.* Crossing Press.

McGlone, P. (2020, July 17). African American museum site removes "whiteness" chart after criticism from Trump Jr. and conservative media. *The Washington Post.* https://www.washingtonpost.com/entertainment/museums/african-american-museum-site-removes-whiteness-chart-after-criticism-from-trump-jr-and-conservative-media/2020/07/17/4ef6e6f2-c831-11ea-8ffe-372be8d82298_story.html

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CARPE Student Fellows at the Carnegie Foundation Summit.

Going Beyond The Equity Pause:
The CARPE Student Fellowship
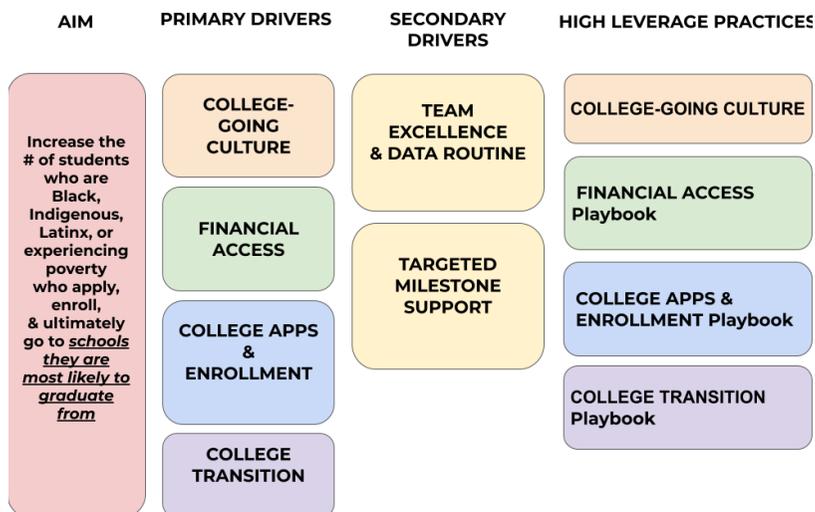
Sofía Tannenaus
High Tech High Graduate School of Education

This article is written primarily for individuals leading or engaging in continuous improvement work in schools who are interested in student-led networks. If you're new to improvement and don't understand terms or concepts here, we recommend you start with either "How to Plan and Implement Continuous Improvement Schools" by Katrina Schwartz for a brief introduction, or "Improvement as a Journey" by Amanda Meyer for a deeper dive.

So you want to involve students in your improvement work. Where do you start? Naturally, most improvers will begin by conducting empathy interviews. This leads us to sit down with a student, invite them to do the talking, thank them for their willingness to share their lived experience, hopes, and fears, and we return to our work feeling informed and inspired. Then what?

In my improvement experience, I find that we immerse ourselves in continuous improvement (CI) work, we look at data for equity, conduct a root cause analysis, ask a chain of why's, generate change ideas, and complete improvement cycles of inquiry to address a problem of practice. As equity-minded improvers, we take equity pauses throughout our processes to consider who isn't at the table and to check in on how we are considering the perspectives of those we seek to serve. Equity pauses and empathy interviews are critical…and they aren't enough. Once we conduct that empathy

Figure 1: CARPE Driver Diagram

AIM	PRIMARY DRIVERS	SECONDARY DRIVERS	HIGH LEVERAGE PRACTICES
Increase the # of students who are Black, Indigenous, Latinx, or experiencing poverty who apply, enroll, & ultimately go to *schools they are most likely to graduate from*	COLLEGE-GOING CULTURE	TEAM EXCELLENCE & DATA ROUTINE	COLLEGE-GOING CULTURE
	FINANCIAL ACCESS	TARGETED MILESTONE SUPPORT	FINANCIAL ACCESS Playbook
	COLLEGE APPS & ENROLLMENT		COLLEGE APPS & ENROLLMENT Playbook
	COLLEGE TRANSITION		COLLEGE TRANSITION Playbook

interview, when and how do we involve students in our improvement work? How do we stress test our strategies and ideas with our intended audience to see if we're on the right track? The CARPE College Access Network has some ideas.

The CARPE Network has brought together 30 schools across Southern California to increase the number of Latinx, Black, Indigenous, and low-income students who apply, enroll, and matriculate to colleges they are most likely to graduate from. Our driver diagram (figure 1) outlines our network aim, our drivers, and high leverage practices from across our network.

While our drivers are college-going culture, financial access, college applications & enrollment, and sense of belonging, we have also doubled down on student engagement. Why? Because those most impacted by the system are best positioned to improve it. As one 12th grade CARPE student fellow shared, "We think that adults know what's best for us but the reality is we know what's best for us, too."

The CARPE Student Fellowship Program: Our route to embedding equity into every step of improvement

Our CARPE Student Fellowship Program format has evolved over the past two years, but the aim has remained constant: to advance equity by elevating student voice. In 2020–21, our Hub team worked directly with 12 students across four high schools on an improvement project. Our CARPE student fellows designed informative workshops for students across the network which led to impressive increases in college knowledge among 9th

Figure 2: CARPE Improvement Method

to 11th grade attendees. In 2021–22, our Hub's student engagement goal was to improve the sustainability of student partnership by adding school site fellowship advisors to the CARPE Fellowship Program. We focused on building the fellowship advisor's improvement capacity using a workbook, which you can find as a PDF linked to the online version of this article at hthunboxed.org. And in the spirit of continuous improvement, we started small to learn from successes and challenges before making this a part of our network strategy.

The Student Fellowship Process

All Fellowship program participants (advisors & students) convened virtually every two months (five times total) for "Fellowship Forums."

Prior to each action period & forum, we walked advisors through an improvement protocol from their Advisor Workbook, which they would facilitate directly with their student fellows. Our collective problem statement was rooted in the steep nationwide decline among high school graduates matriculating directly to college in 2021 compared to 2019 (pre-pandemic). Motivated by the worrisome postsecondary enrollment data, the CARPE student fellows sought to help their peers feel connected to their school and supported with their college and career goals. We followed the improvement method outlined below and students completed the improvement activities highlighted at the bottom of each column (figure 2).

Once they looked at data to understand the problem, excavated root causes, and generated change ideas, students and advisors engaged in an

initial improvement cycle, which informed changes to their second PDSA. This culminated in a conversation during our last forum with school administrators and their CARPE team in which students shared what they did, outcome measures they achieved, and what they learned. Students, advisors, and CARPE teams ultimately considered how this work can be sustained beyond this year.

Change ideas teams came up with

We used "an iterative approach guided by authentic student involvement, leadership, and facilitation," according to a CARPE Fellowship Advisor. As one of our advisors shared, "[Students] aren't just involved, they are it." For example, Lawndale High fellows chose to focus on our sense of belonging driver and sought to cultivate a stronger college-going culture by gathering each teacher's major & college to create classroom signs that read: "Ask me about studying _____ at _____." Meanwhile, Santa Monica High (SAMOHI) fellows were trained by counselor Ernesto Flores and provided peer support during financial aid and college application support sessions. SAMOHI fellows also facilitated FAFSA/CA Dream Act lessons in Government & Economics classes, which led to a completion rate increase from 59%-75% among their entire student body and over 90% among their equity group. This increased Cal Grant awards by 14%, which translates to over $2 million in aid. They went on to present a session on Meaningfully Engaging Students in Continuous Improvement at the 2022 Carnegie Summit as high school seniors…and they rocked it.

Did it work?

To understand the effectiveness of the fellowship program and to measure the degree to which we met our program goals, we conducted a pre- and post-survey about the degree to which students felt they had agency, were confident using their voice, and had an impact at their school. When asked the extent to which students agreed with the following statement: "My input matters when it comes to decision-making at my school," 75% of CARPE Fellows agreed or strongly agreed before start of fellowship program compared to 95% at the conclusion of the program.

In response to the statement, "I am confident using my voice to influence decisions at my school," only 37% strongly agreed at the start of the program compared to 80% by the program's end. Student fellows reflected on their improvement journeys through the fellowship program. According to one student, "The experience has changed so many things for me…I've gained a lot more confidence sharing what's on my mind. I used to think it wasn't my place to share what's on my mind…but CARPE helped me branch out and say what's on my mind and create the change I want to create." This is illustrative of the influence that putting students in a position to lead can

have on the students themselves.

And when we asked students about their influence on their school's college access work, 95% of CARPE Fellows said they had an impact on their school's college access work this year. And all fellowship participants felt they were able to address challenges within the college application process at their school as a result of being a CARPE Fellow. That's a major win in our book! Another CARPE fellow offered a meta reflection of their own college access experience by being involved in an equity initiative:

> It's helped me understand the problems that I'm experiencing too. It's not too often you think about why you are having a problem…like missing support for college applications. You don't really think about it because that's the way it is. But thinking about what might help has not only helped other people but helped me identify areas where I might need support too.

We were moved by the outcomes reported by the students. We also

discovered that there were some unintended (but awesome) outcomes as a result of this work. During our forums, we noticed something organic start to occur: connections between students (same school and cross-school) who did not know each other before. While students collaborated on tasks, they occasionally asked each other about various components of the college application process, sometimes exchanging tips and resources. When asked about this in the post-survey, 95% of student fellows indicated that they supported one another through the college process. While we did not design for this, we learned that setting up the conditions for students to connect is just as important as collaborating toward a shared goal. It cultivates community, belonging, and support.

We also noticed a spillover effect from working closely with fellowship advisors. By further scaffolding improvement protocols and helping advisors become more comfortable with CARPE's improvement methodology, one advisor decided to continue her improvement journey in her classroom. Antonia Guzman, ELA teacher at International Studies Learning Center, designed a semester-long project on creating awareness of social injustices, promoting advocacy, and affecting change. In groups, students crafted a problem statement, conducted empathy interviews with individuals directly connected to the problem, conducted a root cause analysis, set an aim, generated change ideas, and fleshed out an action plan. Antonia elaborates on the impact that using CI in her classroom had on creating meaningful learning experiences for her students:

> When I was first introduced to CI via CARPE I knew it was a valuable tool for the classroom, particularly when it comes to project-based instruction. Last year I decided it was time to use it because I believe it is a tool rooted in advocacy and change. It allows teams to have productive conversations around problems and really focus on what causes those problems in order to become active members in our society. My ultimate goal as a teacher is to help students become active and influential citizens who advocate and bring about change. Through my use of CI in the classroom, I was excited to see how much engagement, critical thinking, and problem solving was happening in my classroom and going beyond the walls of our school. Students took ownership over their own learning and accomplished projects they never thought they could get done. The use of these tools helped me empower my students and allowed them to apply what they learned in the classroom to their world outside of school.

What's Next

So where do we go from here? We have learned that having students at the center (literally—students having a seat at the table) can help us be more responsive to the needs of those we seek to serve and elevate our collective

work. One fellowship advisor explained it like this:

> A lot of the time we deal with the symptoms that we see but it's always surface level so by having the students as part of this work you can get to the roots of the problems. It may not be perfect but we are on our way to getting to the roots of the problems.

While we experienced success through our fellowship program, we sought to incorporate students into our network activities. As a result, we are taking student integration network-wide! We kicked off the 2022–2023 school year with a session for our entire network on partnering with students. Each team learned about Hart's Ladder of Participation, created norms for working alongside students, and identified prospective student ambassadors from their equity aim. There is a difference, however, between involving students in our work when it is convenient or when it makes for a nice addition to our agenda versus truly engaging them as consultants, thought partners, and co-conspirators in our strategizing and change efforts. Our goal is to integrate students onto CARPE teams, which will mean that students will soon be joining CARPE meetings, providing feedback on PDSAs, contributing their own change ideas based on their lived experience, and offering student perspective throughout their team's improvement journey.

We by no means have student engagement in continuous improvement figured out, but we are really good at constantly learning from our successes and challenges. You might walk away wondering, where do I start?! While we can provide you with numerous resources, the starting place is trust, relinquishing some control, and embracing the idea of failing forward. As a CARPE fellowship advisor shared, "Trust them. When you understand their why you realize it's the same why."

Acknowledgments

C3 Mobility:
Near-Peer Mentorship To Support College Transition

Ben Sanoff, High Tech High Graduate School of Education

Cielo Cruz, Cal Poly Pomona

Sofía Tannenhaus, High Tech High Graduate School of Education

Jonathan Villafuerte, FLY Scholars

Julio Garcia-Granados, High Tech High Graduate School of Education

Over the summer, Catalina, a graduating senior at High Tech High International planning to attend San Diego Mesa College met weekly and received support from a college student, Cornor, about making a successful transition. Cornor was able to speak to Catalina with credibility because he had navigated this very journey himself by starting at San Diego Mesa Community College and transferring to San Diego State University. Cornor explained: "I have been in your shoes before so I can show you what to watch out for and stay on top of and what you may not have to worry about. That would have been really beneficial to me". Catalina echoed these themes in describing her experience in the C3 Mobility pilot program: "I felt really supported and comfortable in the program. Knowing that all of the other people around me were going through the same thing too and everyone is here to help."

The C3 Mobility DAO (DAO stands for "Decentralized Autonomous Organization") takes a simple—yet surprisingly uncommon—approach to the challenge of supporting students to make a successful college transition: we nurture a student-led improvement community where students are compensated for their participation. Starting in May 2022, C3 Mobility launched a small pilot with fourteen high school seniors representing student groups historically underrepresented in college. Seniors indicating plans to attend San Diego Mesa College (the mentees) were matched with four

college students who started at San Diego Mesa College and transferred to a four-year college (the mentors). Through these peer relationships students received support and developed a sense of belonging. Within this community, students used the tools of continuous improvement to chart a collective path towards college success. Preliminary data from C3 Mobility is encouraging. According to publicly available IPEDS data, only 19% of San Diego Mesa College students are attending classes full time. In contrast, C3 Mobility mentees are enrolled full-time for fall 2022 at an 86% rate.

In collaboration with these eighteen young people, the improvement hub consisting of CARPE improvement coaches Jonathan Villafuerte and Dr. Sofía Tannenhaus, Julio Garcia-Granados, a data scientist, and Ben Sanoff, director of data analytics, launched the first C3 Mobility improvement community. This article details the inspiration for C3 Mobility, the development of the San Diego Mesa College pilot, the impact of this pilot, shared governance, and the future of C3 Mobility. This piece is co-written by the improvement hub and Cielo Cruz, one of the student mentors.

Origins and Inspirations

The CARPE College Access network is comprised of 30 high schools across Southern California collaborating to improve on four critical drivers of college enrollment: financial access, the college application process, fostering students' sense of belonging, and reducing "summer melt" (that is, the tendency for students who planned to attend college in the spring encountering challenges over the summer which prevent them from enrolling). CARPE schools have worked to reduce summer melt by sending weekly personalized text messages to students and hiring a summer transition advisor to respond to students who are facing challenges completing college enrollment tasks. The network has developed the CARPE college transition playbook documenting promising practices to support a successful college transition.

Supporting a successful college transition is important work: of the 6,000+ students in the CARPE network, as many as one in four students who plan to attend college in the spring of their senior year do not actually end up enrolled in college the following fall. At several CARPE schools we have experienced some success in reducing summer melt by implementing the practices detailed in the playbook. However, even at these bright spot schools, we have struggled to support a successful college transition for low-income and students of color planning to attend community colleges. Particularly concerning are the low rates of first semester full-time enrollment at community colleges, which is a strong leading indicator of college retention and graduation. In fact, CARPE students who enroll full-time during their first semester are more than two times more likely to graduate from college within six years.

Figure 1: C3 Mobility DAO Driver Diagram
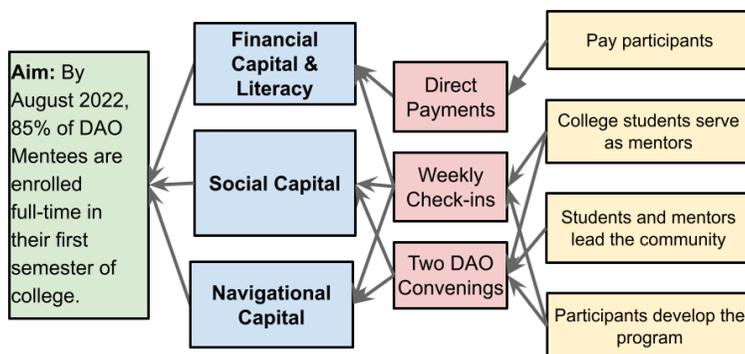
Seeking to understand this problem, we conducted empathy interviews with low-income students and students of color who had enrolled at community college. We identified two primary barriers for students to successfully transition were financial need and lack of belonging in college. The financial need that low-income students in California experience has been well documented: "66% of Black and first-generation college students face food insecurity and 18% are houseless" (CSU Report). Needless to say, it's hard to pass classes when you have to work full-time, when you don't have enough to eat, and when you don't feel you belong.

With a better understanding of the problem, we sought to address these two barriers to students making a successful transition to community college. In our driver diagram (figure 1), we identified the following three primary drivers: financial capital to alleviate economic hardship, social capital to nurture belonging, and navigational capital to increase understanding of how to leverage institutional resources.

During empathy interviews with prospective mentors, student expertise about San Diego Mesa Community College stood out. We realized that the students themselves could provide the navigational capital we had identified as a primary driver. Research confirms the potential of having students support one another. In an Education Trust article, Paula Kashtan explains:

As numerous studies have shown, the benefits of peer leadership are vast. Students are often more likely to build rapport and take guidance from someone with whom they can closely relate, and peers can offer a sense of community and connection that goes beyond what adult staff members are able to provide.

This led us to decide on a peer-to-peer model of support. Underrepresented students who had made this successful transition from High Tech High to San Diego Mesa College would serve as mentors to underrepresented students planning to attend San Diego Mesa College in the fall of 2022 (mentees).

As part of the CARPE network, members of the improvement hub have developed a powerful "student ambassador" program. In this program, students are integrated into the improvement work of their school team. They provide feedback to school staff about their ideas from a student perspective but ultimately school staff retain decision-making power. In C3 Mobility, we sought to move up the ladder of student participation to a student-initiated, student-directed community.

In developing C3 Mobility, we worried that the student-led improvement community we sought to nurture could easily be co-opted by the improvement hub. In the Freirian spirit of seeking to build with young people, rather than for them, we built in guardrails ensuring this would remain a student-led community. To accomplish this, we structured C3 Mobility as a DAO to formalize the role of students in shared governance and to decentralize power away from the hub team. DAOs are digital organizations where each member of the community is allocated governance rights and encouraged to participate in direct democracy by voting on proposals that emerge from the community. This governance process is described in more detail in the last section of this article.

Nurturing the C3 Community

Starting in January 2022, the C3 hub team began the work of nurturing a student-led improvement community to support more students from High Tech High (HTH) making a successful transition to San Diego Mesa College. We chose this for our first pilot due to our close relationships with HTH Schools, access to the data we needed, and a pressing need to better support underrepresented HTH students in enrolling full time at San Diego Mesa College. Using the National Student Clearinghouse (NSC) data we were able to identify under-represented HTH alumni who started at San Diego Mesa College and transferred to a four-year college. In April 2022, we had students apply to join the program as mentors and then conducted interviews to identify alumni who we thought would make strong mentors. Ultimately, four mentors were identified including three HTH alumni who had started at Mesa College and then transferred to a four year college and one HTH alumnus who was experiencing success in his second year at Mesa College.

To recruit mentees, we partnered with college advisors at four HTH Schools to identify and encourage Mesa-bound graduating seniors to apply to the C3

Figure 2: Interactive Process Map

program. The personal recommendation from these familiar support systems added value and credibility to our pilot program. Of the approximately 25 students planning to attend San Diego Mesa College, 20 students applied to participate. Prioritizing students of color, first generation, or low- to middle-income students, we selected 14 of the 20 applicants.

Over several meetings with the four C3 mentors in May 2022, we introduced the C3 driver diagram, engaged in decision-making about the structure of the community, and developed the agenda for the community kickoff in June 2022. We engaged mentors as experts in their own experience by asking them to identify key tasks necessary for students to enroll full-time at San Diego Mesa College. By consulting the college's website and cross referencing this set of key tasks generated by the mentors we created an interactive process map of all the steps necessary to successfully transition from High Tech High to full-time enrollment at San Diego Mesa College.

At the network kick off event in June, the mentors served as the primary facilitators and welcomed mentees with music, warm greetings, and lunch. Mentors took the stage and explained the reasons why mentees were chosen, their similar paths, and how they could work together to transition into community college.

The mentors detailed each step of the transition process by introducing the interactive process map we had developed. Mentors shared their own experience completing these tasks to normalize the challenges mentees would likely face. The mentors facilitated a session in which each mentee used the interactive process map (figure 2). Mentees indicated where they were in the transition process. When they got to a task they had not yet completed they were provided the appropriate link and instructions in real-time to get that task done. Mentors sat alongside them answering questions

while providing support and reassurance.

Over the summer, mentors met weekly with mentees to deepen their relationships, answer questions and challenges, and support mentees in completing all of the transition tasks. Each week, the hub team led a data huddle with the mentors. We utilized the process map activity responses to produce a data display** (figure 3), which tracked where each mentee was in the transition process. This was the core component of the mentoring process because it provided mentors a clear picture of each mentee's status, a log of their conversations, and a place to gather questions that needed to be addressed.

Each week members of the improvement team met with the four mentors to discuss how to best support the mentees by reviewing the data display and engaging in a huddle. During weekly huddles, mentors had time to review their mentees progress in the data display, reflect on what they had accomplished the previous week, and set intentions for the current week. Mentors took turns facilitating these Data Huddles, sharing best practices, and creating action items to support mentees. These weekly meetings also served as an opportunity for the improvement hub to share their own wisdom by introducing topics like career development, financial literacy, and leadership.

Figure 3: Transition Process Data Display. This display and all the data infrastructure for this project was built in Airtable.

Cielo Cruz, a C3 mentor, explained:

> Using the dashboard was amazing as I was able to input everything I talked about with all mentees into an organized collection of information. If I needed to call them a second time that week or just check in I could go back and see what we talked about or what they wanted to accomplish for the following week and bring it up again. I also used it to write notes of each mentee and if they had a question I couldn't answer in that meeting I would try to have an answer by the next.

Cielo explained the C3 approach to mentoring was about developing meaningful relationships rather than just transactional support completing enrollment tasks:

Because I have lived through the experience of graduating HTH and going to Mesa College, I knew the uncertainty of not knowing how to complete the specific tasks in order to be enrolled and I never had anyone to ask. In this program I did my best to make myself available at all times. I checked in with my mentees over zoom weekly where I gave them some tips on how to sign up for class and which classes would be best to handle the first semester of college. We talked about many different things, as I made it a point to talk about school or how their summer was going for a majority of the call in order to establish a connection and make them feel comfortable. Most often we talked about how to navigate the Mesa website and how to look for specific people/programs that can help them best after C3 ended.

Providing an example of the support mentors provided, Cielo explains:

> My mentee Nicole was struggling to understand what her FAFSA money meant. She texted me the question on a day where I was free so we Facetimed to talk through what unsubsidized vs subsidized loans were (we did a little research together) as well as what grants meant. She was comfortable enough to show me her document and I was able to even further explain if she was to accept the grants, how they would be distributed and when she should accept to receive them.

Every other week, the improvement hub compensated mentees over Venmo based on their contribution to the community. Mentees were compensated for completing important enrollment tasks and for participating in the community by attending events and engaging with their mentors. Mentees on average were paid $360 for their participation in C3 with some students earning as much as $550. Mentors were paid two $800 stipends for a total of $1,600 for their work supporting mentees.

Our closing celebration took place on the campus of San Diego Mesa College. By this point, mentors owned their shared responsibility to design

a powerful experience for mentees. Again, mentees were greeted with authentic care, but with a new-found sense of belonging. Mentors took turns sharing their wisdom and motivating students; the personal anecdotes were raw and insightful. Mentees were attentive and inspired. The connection was profound and the outcomes were significant—the C3 Mobility community was successful.

Impact

Preliminary data suggests that we achieved our aim of 85% or more C3 mentees enrolling full-time. Twelve of fourteen or 86% of C3 mentees are enrolled full-time at San Diego Mesa College for the fall 2022 semester. In comparison, San Diego Mesa College has a full-time enrollment rate of 19% according to publicly available IPEDS data. Unfortunately, one C3 mentee melted over the summer. However, the 7% rate of summer melt amongst C3 mentees compares favorably to a 21% melt rate for HTH 2020 and 2021 graduates.

On a survey administered to 12 of 14 C3 mentees at the closing event, students reported that the program supported them in making a successful transition to San Diego Mesa College. Specifically, 92% C3 mentees reported that the C3 program and their mentor were helpful or very helpful in setting them up for success at Mesa. In addition, 10 out of 12 mentees would strongly recommend the C3 program to a senior planning to attend Mesa next year.

Perhaps explaining the reason for this positive feedback, one mentee articulated:

> The most helpful thing about the C3 program was always feeling like I had someone to turn to whenever I had a question.

One mentor, Ethan, shared the impact of being in a position to support someone embarking on a similar path as his:

> When I was first going from a high school senior to a college freshman, it was a confusing time for me. I didn't really have anyone to look to…no one in my family had really gone to school, so figuring all that out on my own was a challenge for me…I do really think that living through that and struggling through that was good for me because if I can pass on my knowledge to people that are going into community college, telling them what they should do, what they shouldn't do, just letting them know that [their] feelings are completely fine…I think that's the help that they're going to need.

Cielo expressed similar sentiments about helping a younger student through

an unfamiliar, and sometimes intimidating, process:

> I genuinely loved helping my mentee know what this meant as I had been in the same boat a few years back. I remember feeling silly asking what my FAFSA document meant and going to a professional at my school seemed scary so I went to a counselor at Mesa College who walked me through what it meant, so being able to replay the moment but where I was the person helping gave me a sense of accomplishment.

While anecdotal, the power of near-peer mentorship is powerful and transformative, not only for the college-bound students, but for the mentors as well.

C3 Mobility paid 14 mentees $5,400 and the four mentors were paid $6,400 for a total of $11,800. In addition, C3 issued two emergency grants for a total of $800 that mentees and mentors could apply for at any point in the program to address financial emergencies. Mentees reported that they spent their stipends from C3 for these common purposes: Mesa parking pass, books for classes, gas, and saved the money to create an emergency fund.

Our post-survey results show that nine out of 12 mentees feel fairly or very confident about graduating or transferring from Mesa College within two years. We attribute this to the program's focus on the three primary drivers: financial capital/literacy, social capital, and navigational capital. Through anecdotal evidence and C3 mobility program outcomes, we find that near-peer mentorship integrated into the continuous improvement framework is a high leverage investment.

Shared Governance and Future Plans

As a DAO, C3 Mobility seeks to engage our community in decision-making and governance. Since this was a pilot, we focused on engaging mentors as decision-makers with the hope of learning how this could work with mentees for future iterations of this program. From our first meeting with mentors, we provided them opportunities to make decisions that would

impact the community. For example, mentors decided how often they would meet with mentees, how we would communicate with mentees, how we would pay mentees, and how much we should pay mentees for completing specific tasks. In addition, mentors made many of the design decisions and were the primary facilitators for the kick off and closing events. Initially, we engaged in an informal decision-making process using fist-to-five voting. Each mentor voted on a one to five scale about whether they supported a proposal. If they voted a "one" that would effectively veto that proposal. We found this to be a helpful process because we could quickly vote and if any mentor was less than a "five" we could ask them to explain why. This would

quickly surface concerns or objections that we could talk through as a group.

Traditionally DAO's engage in formal governance and invite each member of their community to vote on proposals that emerge from the community. DAO community members are issued a governance token, vote using a Web3 application like Snapshot, and these votes are recorded on the blockchain. We worried that starting with this formal DAO governance process would be overwhelming to mentors. For this reason, we started with a simple decision-making (fist to five voting) process. In addition, Web3 wallets like Metamask that DAO members use to vote can be confusing so we took the time to explain how these wallets work. Despite these challenges, if we were to operate as a DAO and have students participate as equals in governance we would need to vote on the future direction of C3 Mobility on the blockchain.

In service of this goal, we facilitated a closing meeting with all four mentors where we scaffolded the process of generating governance proposals and voting on the blockchain. We started this process by reviewing the end of survey feedback from mentees, particularly the longer open-ended responses where mentees described opportunities to improve the C3 program moving forward. Based on this feedback, each participant generated proposals of what should be changed about C3 moving forward. Then we clustered similar proposals and everyone had five votes to distribute to the proposals we thought most important. Any proposal receiving more than three votes was then added to the C3 Mobility Snapshot site. Snapshot is a Web3

application which allows members of DAO communities to vote on the blockchain.

C3 Mobility minted the OPP governance token and then distributed 10 OPP tokens to the Web3 wallet of each mentor and member of the improvement hub. Everyone then logged into the C3 Snapshot Site (figure 4) and voted on each of the proposals. In this way, tools like Snapshot support direct democracy where each community member votes to determine the direction of a project.

As a community, C3 passed the following proposals for future iterations of the program:

1. We should save at least $10,000 of our funds to expand the program next summer
2. Next summer we should expand this program by inviting mentors who attended other local colleges (City College, Miramar, Grossmont, and Southwestern)
3. We should foster a sense of community with a chat channel / forum
4. We should build a stronger community by providing mentees and mentors with more opportunities to connect with each other through recreational in-person activities.

This first C3 Mobility pilot focused on San Diego Mesa College provides strong proof of concept justifying further experimentation and iteration. The results of this pilot suggest student-led improvement communities offer a powerful framework to bring together young people to address real world issues like inequitable educational outcomes. In addition, DAOs can offer an organizational structure for improvement networks that decentralize power away from the hub through community governance. We also see great potential in incubating new types of educational philanthropy like C3 Mobility where direct cash transfers are administered by the student community. Just as noteworthy is the invaluable impact of providing college-bound students with personalized support from a student who has walked their path and the leadership opportunity for underrepresented students to step into a transformative role, build their confidence, and thrive.

Figure 4: C3 Snapshot Site
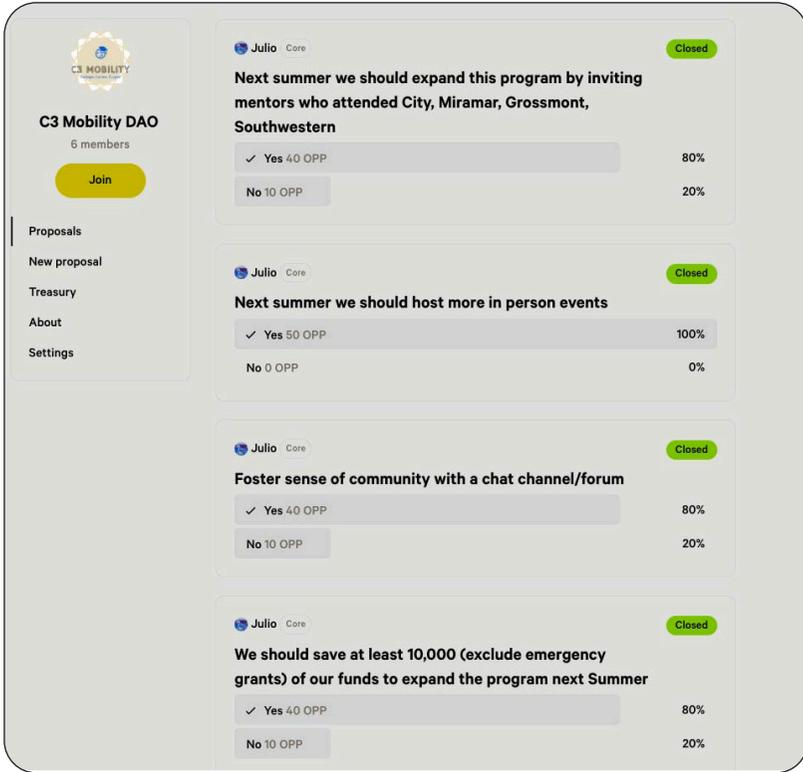
The Balance of Convergence and Divergence in Building Collective Efficacy

Aurora Kushner & Thomas Rochowicz,
Washington Heights Expeditionary Learning School (WHEELS), New York

Donna[1], a fourth grader in Ms. Jackie and Ms. Brenda's class, explained her work on the fractions grapple problem under the document camera, and when she finished, several thumbs were raised. She called on Luis first, who asked, "How did you get your answer by using this strategy?" As Donna reflected on her work, questions were posed by Denelis, Evelyn, and Eleanor before the teacher, Ms. Jackie, acknowledged the creativity in Donna's method and asked another student, whose method she had observed during her strategic monitoring of the classroom, to share her method for the next discussion. To launch this discussion, Ms. Jackie used equity sticks so that all students felt a greater sense of accountability to the discussion and to the community of problem-solvers, and to check her own biases when determining on whom to call. She had reflected on her inclination to call on many of the same students repeatedly, and through coaching and observation feedback, she built in this intervention. Overall, three students presented their work, over 70% of the students asked questions or shared ideas, and there was greater evidence of students engaging in meaningful math discourse.

WHEELS, our school, is a NYC Outward Bound School implementing the EL Education school model. The core practices establish our vision of project-based learning, deeper instruction, and Crew, our advisory program that focuses on creating a sense of belonging and agency for students and staff. We believe that our students, 93% of whom identify as Latinx and

over 80% of whom received free and reduced lunch, should be "leaders of their own learning", but our math classrooms have not always featured this much student-led, collaborative problem-solving. We face similar challenges to other schools: teachers' mindsets on math instruction and their own math histories, the pressures to remediate and accelerate coming out of the pandemic, and students' mindsets about math, their intelligence, and classroom discussions. In the 2021–2022 school year, our school applied our continuous improvement (CI) cycles toward mathematics, focusing our elementary grades and our math classrooms in grades six to 12 on bite-sized, evidence-based practices that we would develop together.

In our roles as principal and school coach at WHEELS, we are deep believers in the power of continuous improvement cycles to increase the collective efficacy of teacher teams to ultimately produce more equitable student outcomes. In the NYC Outward Bound Schools network, continuous improvement is our engine for disrupting historical systems of racial and social inequity and a process to remove the predictability of success that correlates with any singular factor to ensure high outcomes for all. Within this approach lies a significant tension between the convergence toward a shared vision, shared practice, and consistent, quality implementation across classrooms, and the divergence of teachers taking risks, learning from failure, and increasingly taking ownership over their collective practice, or what Allison Gulamhussein describes as the dual roles of teachers as both technicians and researchers. As technicians, educators are converging to implement and codify shared, evidence-based practices across classrooms. Equally important, as researchers, educators in their classroom and on their teams are making decisions and modifications in concert with their students and based on their data, occasionally varying their implementation and analyzing their impact. Constantly tending to this balance between convergence and divergence is one of the primary tasks of school leaders and continuous improvement coaches as we build our teams' collective efficacy and drive overall improvement in student learning.

Jenni Donohoo and Steven Katz (2019) identify four processes that create "mastery experiences" and cultivate collective efficacy: learning together, cause-effect relationships, goal-directed behavior and purposeful practice. We have learned, reflected on, and implemented different change ideas for each process as we have tended to the balance between convergence and divergence, and we highlight key decisions for each process that have propelled our CI work forward while deepening our commitment to collective efficacy.

Process of Collective Efficacy	Steps to Promote Convergence	Steps to Preserve Divergence
Learning Together	Common Problems of Practice and Root Cause Common Change Idea Criteria	Staff choose PD group with predetermined problem of practice and root cause PD Group and Facilitators choose change idea based on criteria
Cause-Effect Relationships	Workplan with leading and lagging Indicators for whole school	Each inquiry group chooses their leading indicators that they are monitoring within their cycle
Goal-Directed Behavior	Shared Agendas with shared criteria for each part of the cycle	The leads of each group make changes based on their specific change idea
Purposeful Practice	Common protocols to focus learning, with aligned artifacts	Choice from menu of artifacts

Process One: Learning Together

Donohoo and Katz describe the first process, "Learning Together," as teams coming together working to solve problems that ultimately will support the learning needs of their students. Each June, our Instructional Leadership Team (ILT) establishes a school-wide goal, written as a theory of action. By establishing one common goal, three changes in student experience, drawn from EL Education's Deeper Instruction Framework, and three changes in practice, we are converging, establishing parameters for our high-powered professional development (PD). PD groups and grade-level teams to select problems of practice, root causes, and change ideas that align. After multiple iterations of guiding this process, we created an opportunity for divergence by providing a menu of options of problems of practice that are aligned to the theory of action (structured choice), fishbone protocols to generate root causes collectively (open-ended), and a menu of change ideas that align to a shared set of criteria (structured choice). Tweaking the decision-making process in this way focuses teams on quality change ideas and allows us to learn from different groups' shared practices or variability while honoring the authentic and nuanced problems that teams want to tackle together.

For example, our two Math PD Groups both focused on students engaging in more flexible problem-solving and collaborative discussions as a means to all students accelerating their math proficiency, and while they initially chose different problems of practice—PreK–7 started with anticipatory frameworks and 8–12 started with grapple problem design—they eventually converged again by Cycle 2, when both groups were anticipating the methods that students would use to grapple with a task. As an ILT, we provide feedback to each other on the alignment to the larger goal and use common criteria to evaluate 'change ideas', but we want the PD facilitators and groups to make choices that are rooted in the needs of their classrooms and students. "At the culmination of our first cycle of Math PD, teachers were invigorated by the results of their collective efforts!" said Grace Dircz, a member of the ILT leading the PreK–7 team. "As we celebrated immense gains in productive struggle, we noticed that higher order questioning was an area that we could continue to build out. But perhaps even more importantly, we saw that teacher voice continued to dominate class discussions and we committed to change that in the subsequent cycles."

Process Two: Cause-Effect Relationships

Donohoo and Katz describe a second crucial process of collective efficacy, "Cause-Effect Relationships," as teacher teams connecting "evidence of student learning" and "what caused those results (implementation of evidence-based strategies)." This provided an immediate opportunity for fostering divergence: If we only value one type of evidence for all groups, we see team engagement decrease. However, if we invite all groups to select

their own measures of impact locally, it is difficult to compare learning across teams. Further, without some centralized support and accountability, the data might not get collected consistently. Therefore, we establish convergent lagging indicators for the entire school, aligned to our theory of action (e.g., NWEA MAP Growth). This convergence allows us to compare growth, brightspot certain grade-level teams, and leverage their promising practices as future change ideas, while also allowing us to assess the impact of our larger CI process each semester.

Since our CI cycles require more frequent progress monitoring on leading indicators, our teams of teachers are connecting shorter-term evidence to decisions in their classrooms. The most common leading indicator for us is classroom walkthroughs. We learned last year, however, that if every PD group chooses different walkthrough indicators and changes them each cycle, it is difficult to monitor growth across groups and time. So this year, we have PD groups choosing some indicators and all PD groups and accompanying walkthroughs using three primary indicators, one for each change in student experience, so that we can again compare across groups and over time, increasing our opportunities to learn from each other.

In practice for our Math PD groups, teachers began the year with different walkthrough indicators based on their different change ideas but converged so they could compare growth based on their moves in PD. The walkthrough data combined with other leading indicators of their choosing allowed teachers to connect their individual and collective efforts to the impact they were having on student learning.

Process Three: Goal-Directed Behavior

Our PD groups focus on what Donohoo and Katz call "Goal-Directed Behavior," their third collective efficacy process, where they distinguish between mastery goals (how to teach a skill) and performance goals (how students perform the skill), and conclude that strong teams know that when they are learning together as a team, they need a mastery goal to target their implementation as well as a performance goal to monitor student progress. Change ideas that meet a set of criteria enable teams of teachers to focus on how to teach better, but we have found that teams can still run across pitfalls if the time they spend together is not primarily focused on how to improve their practice. On the side of convergence, our PD has grown with a common cycle process that includes common agendas. On the side of divergence, these agendas can be adapted to meet the groups' needs, culminating with common learning summaries. In practice, our Math PD groups allowed teachers like Ms. Jackie to not only focus on broad notions of collaborative problem-solving but to also drill down on concrete, daily practices like equity sticks and the equitable selection of student work. Her practice improved as a result of the work in her group, pursuing the criteria

of quality implementation she co-created from a change idea she helped to select, all while working toward our larger school-wide goal.

Process Four: Purposeful Practice

Donohoo and Katz's final process, "Purposeful Practice," is described as "specific, deliberate efforts to improve." The selection of artifacts and accompanying protocols is an opportunity to ensure accountability to the shared commitment of implementation while also offering room for thoughtful improvisation if a teacher sees an opportunity to learn from a tweak in the classroom. We have found that teachers recording themselves is the gold standard for artifacts, and although we cannot mandate it, we provide it as the first option in all PD groups and highlight the growth groups see when they embrace the vulnerability. We provide additional choices, including looking at student protocols, but we have PD groups decide what makes the most sense for their learning based on their change idea. Once again, convergence with structured opportunities for divergence. This connects back to the leading indicators they established together, and when teachers provide input into the what and the why, we have found greater degrees of implementation and mutual accountability. For our Math PD groups, our PreK–7 embraced the trust and vulnerability of recording their grapple problem debriefs and our Grades 8–12 started with tasks but eventually embraced more video sharing as well. Ultimately, we want teachers accountable to each other in implementing their change idea so we can all learn together, and being strategic about the artifacts and protocols engages their "technician" and "researcher" roles.

Conclusion: Growing Together

Between the winter (mid-year) and spring (end of year) assessments of the NWEA MAP Math Assessment, eight of the 13 grades that administered the assessments were in the 98th or 99th percentiles in the "school conditional growth percentile," meaning most grade levels in our school grew more than those same grade levels in almost all other schools. This growth was achieved in large part thanks to teams of teachers learning together through a disciplined CI process that balanced convergence toward our goal and divergence in what to learn and how to learn it together there. In order to build the collective efficacy of teacher teams, school leaders and CI coaches must tend to the balance of convergence and divergence that result in teachers improving the quality of their implementation of shared practice across teams while continuing to take risks, try new approaches, and make decisions for and with the students in their classrooms. Within CI cycles is the need for many decisions to be made, and the way those decisions are made, by whom, and for what purpose will determine how much these methods can actually build teacher teams' sense of collective efficacy.

Notes

1. The names in this article are pseudonyms.

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Contributors

Shreena Bhakta is a Student Consultant for the Improvement for Equity by Design team, where she strives to teach others how integral student voice is to the world of education, both in and out of the classroom. Graduating from High Tech High in 2021, Shreena gained experience with elevating and integrating student voice into work through her time in the Student Ambassador program. Shreena is currently a second-year Nursing student at California State University, Fullerton.

Gigi Butterfield is the co-author of Dear Math. She is currently a screenwriting major at Loyola Marymount University and a former student of the Gary and Jeri-Ann Jacobs High Tech High in San Diego, California. She thrives in situations where she can explore math deeply and ask thoughtful questions of her peers and her teachers. Gigi has attended project based learning schools since the age of five and, even in college, is passionate about how PBL plays an integral role in revitalizing heavily antiquated math pedagogies.

Cielo Cruz graduated from HTH in 2019. After high school, she attended Mesa College and transferred to Cal Poly Pomona where she is currently majoring in Urban and Regional Planning. The transition from community college at first was challenging but she was able to navigate and find a group of people who supported me through it. Her hope is to help the mentees of the C3 Mobility program develop that support not only through academics but through life as well!

Carmen Coleman serves the districts in the OVEC region as the Chief of Transformational Leading and Learning. Prior to this role, she served as Chief Academic Information Officer for Jefferson County Public Schools, Associate Professor in the Department of Educational Leadership Studies at the University of Kentucky and co-director for both the Next Generation Leadership Academy and the principal preparation program. Her work has focused on transforming the school experience from one developed to meet the needs of the Industrial Age to a system that will equip learners for success in the world today.

Julio Garcia-Granados joined the High Tech High Graduate School of Education in April 2020 as a Data Scientist within the Center for Research on Equity and Innovation. He received his Bachelors of Science in Computer Engineering from Northeastern University in Boston, Massachusetts where he developed an interest in analytics and data science. His work currently focuses on the creation of educational data tools.

Aurora Kushner is the Director of Impact and Continuous Improvement and a School Coach at NYC Outward Bound Schools. She taught high school and was a founding faculty member of a secondary school in Massachusetts before coming to NYC 10 years ago.

Amanda J. Meyer is a designer, facilitator, coach, and improvement advisor who builds educators' capacity to solve problems and improve learning experiences and outcomes for all students. Amanda discovered her passion for improvement science eight years ago, during her time at the Carnegie Foundation for the Advancement of Teaching. At Carnegie, she designed and facilitated numerous improvement science learning experiences, including the EdX online course, "Improvement Science in Education," taken by thousands of learners around the world. She began her career teaching high school English as a Second Language in San Antonio, and currently resides in Oakland.

Eliana Meza-Ehlert graduated from High Tech High Media Arts, where she gained experience implementing student voice in improvement work through her leadership in the Student Ambassadors program. As a Student Consultant for the IExD team, she works to equip educators and students with tools and strategies for creating equitable change in their communities. Eliana is currently a second-year student at Pitzer College studying Linguistics and Spanish.

Andres Perez has a BA in Journalism from Sacramento State University and a MA in Sociology and Education Policy from Teachers College, Columbia University. He has over ten years of experience in schools across the United States including seven years teaching in Arkansas and California. He previously advised Congresswoman Susan Davis on education and workforce issues in Washington D.C. He currently works as a Partnership manager at the education research organization, Project for Education Research that Scales (PERTS).

Thomas Rochowicz is the Principal of Washington Heights Expeditionary Learning School (WHEELS), a NYC Outward Bound School serving Grades Pre-K-12 in New York City. He taught in elementary, middle, and high schools for nine years before serving as principal for the past seven years at WHEELS.

Sarah Strong is the co-author of Dear Math. She loves hearing people's math stories. She has taught math and science to grades 6 through 12 at High Tech High in San Diego, and she also works for the High Tech High Graduate School of Education, teaching various Math Pedagogy courses and supporting the new math teachers in the organization. She has led workshops on Project Based Learning in mathematics, student-centered assessment, and alternative grading systems. After designing and facilitating a project on math identity in 2017, Sarah grew interested in the ways students told stories about their experiences in math class. Ever since, she has been accumulating these beautiful stories and using them to design classroom experiences that center students more wholly.

Sofía Tannenhaus is an Improvement Coach with the CARPE College Access Network at the High Tech High Graduate School of Education's Center for Research on Equity & Innovation. Motivated by her background, nearly all of Dr. Tannenhaus' research has sought to improve educational outcomes for low-income First Generation students. She has immersed herself in work with various school districts and programs to improve college access, support informed college decisions, and ensure a seamless college transition among historically underrepresented students.

Jonathan Villafuerte personifies a story of courage and resilience. As a teenager he dealt with the challenge of navigating difficult situations in a rough neighborhood and tough school system. Driven by a dream to change his reality, he began to wonder when it would be his turn to choose the direction that would determine his own life purpose. Fortunately, he found resources that transformed his life and helped him earn a full-ride scholarship to Point Loma Nazarene University. In 2009, he became a first-generation college graduate with a bachelor's degree in psychology. Mr. Villafuerte has since earned a Masters of Science degree in Counseling (with a PPS credential) from San Diego State University. He has made a lifelong commitment to bridge the opportunity gap as an educator, public speaker, and urban-education consultant.

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