CADRE

Using Performance-based Assessments to Advance Teaching and Learning in High School Classrooms

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Elena Diaz-Bilello and Medjy Pierre-Louis

School of Education
UNIVERSITY OF COLORADO **BOULDER**

Introduction

In this third and final paper of the Performance-based assessment (PBA) series, we focus on sharing highlights from documenting the work taken up in case study classrooms using PBAs to assess postsecondary and workforce readiness (PWR). In this paper, we document to what extent the PBA activities designed by teachers contributed to fostering ambitious teaching practices in classrooms and engaged students in their learning.

Building Ambitious Teaching Practices using PBAs

As highlighted in the teacher conjecture map discussed in the first paper, if PBAs are designed to incorporate the design elements envisioned by the state, and if teachers are equipped with supports to implement this work, we hypothesize that teachers will take up practices which include:

1. The use of strong formative assessment practices to support student learning,
2. Designing and using authentic and meaningful tasks and activities for students, and
3. Integrating the development of essential skills (i.e., 21st century skills) into classroom activities and tasks.

Ambitious teaching practices entail having teachers connect classroom activities and tasks to the big ideas of a discipline and essential skills which then lead students to acquire the skills and knowledge to engage in authentic problems and to achieve academic learning goals (Lampert & Granzini, 2009; Ball & Forzani, 2009). Within the context of the PBAs embedded in the Project-based learning (PBL) units used at these two schools, we anticipated that the four teachers engaged in this work would integrate the development of essential skills in their units to provide meaningful learning experiences for students that are relevant and deemed necessary for deepening content mastery (Condliffe et al., 2017). The hypothesis for this work that aligns with expectations for ambitious teaching was that these learning experiences and tasks would lead to more equitable and engaging learning environments for students since these build on prior knowledge, connect with students' lived experiences and foster student agency (Lampert & Granzini, 2009).

As we observed classrooms and conducted interviews with teachers and students, distinct patterns across the two sites emerged and pointed to varying levels of ambitious teaching practices taking place between classrooms and schools focused on this work. In the second paper, we noted that overall, we found that actors situated across levels in the educational ecosystem surrounding teachers (state, district and school leadership) were supportive of this PBA work. This finding suggests that these levels which can hinder the success of initiatives at schools (e.g., see Fullan & Quinn, 2015) were less likely to directly impact the varying levels of ambitious teaching practices observed across the four teachers engaged in the PBL and PBA work. At both sites, all four teachers confirmed that they received ample support and resources from the state, district, and the school leadership team to implement this work. They also noted that their approach to implementing PBL and PBA did not conflict with PWR policies communicated at different levels of the system.

However, as indicated by the teacher conjecture map, weak horizontal coherence found at one school, Cottonwood, would likely influence how teachers can effectively engage in this work. Unlike the situation at Mulberry, teachers at Cottonwood implemented

PBLs and PBAs in isolation. As highlighted in the previous paper, school leadership at Cottonwood did not discourage the formation of collaborative structures, but rather, the teachers indicated that they had not engaged with one another to set forth a shared vision across classrooms to co-design and implement the PBL/PBA work in teams. In this paper, we walk through key findings from each of the different data sources and then highlight key themes that surfaced across those sources to help contextualize and describe the varying levels of ambitious teaching practices found across schools and classrooms.

Observation Data

Across observations (see Attachment A to view observation "look-fors"), we found that all four teachers consistently provided students with authentic activities and tasks, and they gave their students ample opportunities to direct the focus of their products and shape their responses to the PBAs according to their interests. This finding conforms with what has been documented as best practices by other researchers observing teachers enacting PBAs using PBL approaches (Boardman et al., 2021). However, when evaluating other aspects of classroom interactions and activities, key differences surfaced between Cottonwood High and Mulberry High. These differences centered around the capacity for each teacher to skillfully design activities and tasks that embed essential skills, and to use an array of formative assessment strategies to effectively instruct and assess students on the PBAs.

Varying Capacity to Apply Formative Assessment Strategies

At Mulberry, the two teachers consistently demonstrated strong instructional practices on all three focal areas of our observations (formative assessment practices, authenticity of activities, and fostering essential skills). In the classrooms observed, the teachers designed their PBLs and PBAs to cultivate essential skills such as collaboration by structuring opportunities for students to receive and share feedback with one another, and by designing group projects for students. Both teachers also designed classroom activities and tasks that encouraged students to take risks in their learning, built on prior knowledge established with students to extend their learning, and created a classroom environment that allowed for multiple student perspectives and ideas to be shared. They also encouraged students to apply learned research skills to investigate topics of interest to them such as working on in-depth research projects focused on issues of social-justice.

Out of the four teachers, Ms. Hamid emerged as the teacher that consistently used formative assessment strategies in more effective ways to strengthen and engage student learning. As a result, she appeared more successful in integrating the development of essential skills in her classroom activity and tasks. She was also the only teacher observed that used peer-assessment and feedback strategies in her classes. In each class, we observed that Ms. Hamid intentionally structured the class time and activities to ensure students had opportunities to: lead discussions, work collaboratively and independently; serve as facilitators in student feedback sessions; engage in extended discussions with teachers and peers; and engage in meaningful reflection through self-assessments focused on concepts covered in class and focused on reflecting upon progress made in completing the PBA task.

Similarly, Ms. Hamid's colleague, Ms. Gonzalez, was intentional about designing classroom activities to promote essential skills, often giving clear instructions to students to guide them in planning and reflecting on their PBA task completion. However, when we observed Ms. Gonzalez teaching a class serving a

higher proportion of students with varying learning needs (e.g., students receiving varying Individualized Education Program [IEPs] supports), she struggled with structuring activities and using strategies that would elicit participation from those students. This observation appears to complement input received earlier from Ms. Gonzalez, who reflected that as a person who is still shifting away from traditional teaching and assessment practices, she "is still learning" how to skillfully meet the needs of all students using non-traditional approaches. That is, she is still in the process of learning how to modify the project activities and tasks to better attend to the learning needs of students with IEPs.

In contrast to the teachers at Mulberry, the two teachers at Cottonwood struggled to implement key areas of ambitious teaching practices such as enacting formative assessment practices and fostering essential skills through the PBL activities and tasks provided to students. As a result, the two teachers at Cottonwood seldom used formative strategies to uncover student reasoning and to inform instructional steps. However, observed differences surfaced between the two teachers relative to instructional strategies deployed and the classroom environment established.

For example, Ms. Jean the science teacher appeared to experience a higher degree of success in implementing PBAs than the English Language Arts (ELA) teacher, Ms. Strauss, by building opportunities for students to deepen understanding of science content through applied and authentic activities and tasks. Although we did not observe students engaging in collaborative work and many opportunities to foster essential skills in the project activities and tasks (e.g., pushing students' reasoning, analysis, and synthesis skills) were missed, Ms. Jean scaffolded the activities to help students understand the steps and requirements needed to complete the assigned PBA tasks. She also provided clear success criteria to guide expectations for developing final products for the PBAs. However, Ms. Jean struggled to activate discussions with her students and used questioning techniques focused primarily at the evaluative level (Ruiz-Primo & Furtak, 2006), where probes used were limited to searching for correct answers from students. In each of the two classes observed, this evaluative approach appeared to minimize discourse in the classroom and minimized opportunities for students to engage in productive struggles with their own learning.

In the case of Ms. Strauss, she struggled with both the design and implementation of the PBLs and the PBAs for her students. Out of the four teachers, Ms. Strauss consistently struggled to integrate formative assessment practices and missed opportunities to integrate essential skills in classroom activities and tasks. Although her tasks were designed to have authentic applications, the learning targets and goals were not apparent in the activities observed or in the lesson plans provided. Additionally, the success criteria expressed through a rubric that she provided did not align with state expectations for the grade (11). For example, the criteria to obtain the highest score of a 4 on the rubric for 'Organization' are: "Information is very organized with well-constructed paragraphs." These criteria are not only vague, but does not meet the state's expectations for this skill for Grade 11, which is focused on evaluating how students process and synthesize ideas and information gathered from relevant sources to answer complex questions.

Another key issue we observed was that Ms. Strauss struggled to provide adequate structure and supports for students to successfully engage in the PBL activities and PBA tasks. For example, in her observed classes, she rarely applied fundamental pedagogical skills needed to effectively deploy PBLs and PBAs such as scaffolding or modeling for her students, and breaking

down complex tasks into more manageable activities to build and promote skill development over time.

Impact of COVID on Formative Assessment Practices

While the teachers at Mulberry and Cottonwood demonstrated different levels of effectiveness and skillfulness in deploying formative assessment strategies, all four teachers encountered challenges to find ways to support their students in the new hybrid and virtual learning contexts. In the fall classes observed, technological difficulties experienced including internet connectivity issues disrupted every teacher's ability to effectively connect with all students. In the case of three teachers, the novelty of working in a remote platform or in abiding by COVID-19 guidelines appeared to pose challenges to effectively carrying out project work and tasks. At Cottonwood, potential opportunities for collaborative learning appeared stifled in Ms. Jean's classes as she struggled to structure an engaging learning environment for students under social distancing measures. Her colleague, Ms. Strauss, was not accustomed to using the technology to deliver instruction, and this hampered her ability in general to effectively use classroom time.

At Mulberry, although both teachers demonstrated stronger ambitious teaching practices overall, the virtual interface resulted in some observed negative repercussions for instruction and assessment. Ms. Gonzalez experienced some difficulty using the technological platform to foster collaborations across students on group projects for one class. For Ms. Hamid, the refusal of some of her students to turn on their digital cameras appeared to limit her ability to gauge the needs of those students during in-the-moment instruction. Considering that the power of formative assessment practices occurs through the social interactions taking place during learning activities (Bell & Cowie, 2001), Ms. Hamid's challenge in eliciting responses from some of her students in a purely remote environment appeared to impact the efficacy of her instructional efforts for a subset of students.

Teacher Think-aloud

Following the completion of classroom observations, we used a think-aloud protocol with each teacher to uncover the process they used to evaluate what students know and can do in relation to the work they generated from the PBAs. We asked teachers to participate in this think-aloud so that we could learn whether the PBAs could provide them with actionable information to inform teaching and learning. During the think-aloud, we asked each teacher to analyze the quality of work produced by students, to describe any conceptual struggles they saw in the student work, and to identify what, if any, instructional steps were taken or could have been taken to help strengthen or challenge the student. Based on our coding of the teacher think-aloud data, two key themes surfaced: 1) teachers with observed stronger formative assessment practices provided richer qualitative insights about the student work reviewed and could more confidently speak to the instructional steps needed to improve or challenge their students; and 2) that the strength of teacher-student relationships provided an important lever for helping teachers acquire a more comprehensive understanding of what students know and can do.

Intersection of Formative Practices and Insights into Student Work

Based on our analysis of the teacher think-aloud data, we found that the degree to which teachers could engage in a more thorough assessment of what their students know and can do using the PBAs largely mirrored the patterns found in the observation data.

That is, the teachers with stronger observed formative assessment practices could provide richer descriptions of the quality of work produced, identify the needs of students with more precision, and address the type of instructional steps needed to guide students further. To illustrate, we highlight selected excerpts from conversations with Ms. Hamid and Ms. Gonzalez at Mulberry. In the first excerpt, Ms. Hamid shares her insights to specifically pinpoint the areas that a student struggled with when writing assignments focused on using textual evidence to support a position:

> Ms. Hamid: *If you scroll to the bottom, you'll see that now he starts to tie [his argument] back to the political lens. And the students know that when they write their problem statement, they must have data [to support claims made] in that problem statement. They have to give me the data to prove that it's a problem…that's something we've worked on all year. And so this is [now] January, and his problem statement is, "There is a problem with health issues being politicized because, according to Ash Clinical News, a magazine for American Society of Hematology, doctors Goldenberg and Hersh reviewed billing and specialty data from the federal government's National Provider Index and then matched more than 55,000 physicians in 25 states with available voter files that included party registration." He [constructed] this by himself, and I said, "Holy cow, this is awesome. You followed [my guidance]. We see [in his statement] that he has the problem identified with health issues being politicized. He cited a source. He told me what that source was, and then he gave me data. But the problem is, obviously, the data doesn't really support his statement!*

In the second excerpt, Ms. Gonzalez addresses the type of instructional supports provided based on insights gleaned from reviewing the outline of a student's research paper:

> Ms. Gonzalez: *She worked with an extra level of autonomy and independence…and she [shared with me], "I feel really good about this outline [focused on the research topic of individualized learning]. Can you just check over it and make sure, I'm not missing anything here, if I'm heading in the right direction?" And then the [ensuing] dialogue that we had [came from a series of] questions. I shot some questions at her. I said, "Is there ever a place for memorization learning? Do you think there is a place for this ever?" And we chatted about that, and then I challenged her about constructivist learning a little bit just in a – you know, a way that she had defined it. And we… had [several] conversations back and forth, so we really were able to talk about the [topic in-depth]. She had the structure. She had the sources… her [needs] was [to tighten] how she was putting [these ideas] together conceptually [to support her argument]."*

In the first excerpt, Ms. Hamid celebrates how a student adjusted his response based on feedback received but still highlights a specific area to continue working on to help this student strengthen the use of evidence to support stated claims. In the second excerpt, Ms. Gonzalez reveals the use of questioning and engaging in extended discourse with a student to push her thinking and to deepen the student's conceptual understanding of the topic. Furthermore, it is important to note here that the student described by Ms. Gonzalez has demonstrated that she can undertake the work more independently while still advocating for support when needed to improve her product. This may suggest that this student is building important self-regulatory skills through the process of engaging with the PBA work.

In contrast, when reviewing the reflective data from the two teachers at Cottonwood, the qualitative insights shared point to more superficial understandings of what their students know and can do. In the first excerpt, Ms. Jean describes insights gained from a higher performing student:

> Ms. Jean: *[Aaron] is understanding what my expectations are now that when I [tell] him "This [project] has got to work,"…I mean, it doesn't have to – it's the process for sure, you know, that I'm most interested in. But in the end, [I tell him] I'd like to see you be successful at this is what I say to him. He answers questions in full sentences. He gives explanations. He knows how to transfer his thoughts to the paper.*

In the second excerpt, Ms. Strauss reflects on insights gained from a student that has trouble meeting the expectations for her course:

> Ms. Strauss: *[Antonio]'s– paper did not score well only because of the criteria of MLA formatting and research…but there, again, it's – like, he did try to adhere to MLA formatting…now, I do think I see transitions in the conclusion here: "All in all, when building a doghouse-" He supports his thesis. So even though I consider [him to be] low [on the rubric], he has some promise. I've approved all of these projects, and I feel that every project I approve, I approve it because I really see a learning opportunity within the project from start to finish. But then when I see this [points to another paper], I'm [thinking], "This is a poorly written research paper…here again – just like with Antonio, who I say, you know, has one of the worst papers…"*

In the first excerpt, when Ms. Jean is asked to talk about the qualitative features she sees in the student work that yield insights into what Aaron knows and can do on a physics task, she notes that he can generally answer questions in "full sentences," "explain" his work, and transfer ideas to a paper. Although these qualities do appear to distinguish Aaron from another student reviewed who struggled with communicating through writing, this description does not provide any substantive insights into how well Aaron can engage in sense-making and problem-solving with scientific phenomena explored through the project and accompanying tasks.

In the second excerpt, Ms. Strauss references information from a scoring rubric focused on superficial qualities to evaluate student research papers. More specifically, she references "MLA formatting" and in other instances, refers to "time management" and "grammar" as key criteria that differentiated higher scoring from lower scoring students. This excerpt, along with several other examples from the think-aloud with Ms. Strauss, suggests that the practices employed by this teacher potentially reify power-structures that are harmful in fostering an equitable learning environment (Montenegro & Jankowski, 2017; Darling-Hammond, 1994). In this excerpt, she described Antonio's paper as the "worst" primarily because he failed to comply with MLA citation rules. Although she does note that other aspects of his paper showed "some promise," she does not give Antonio credit for any substantive writing presented in the paper. This focus on student deficits and not being able to build on observed strengths appear to also constrict her ability to articulate what her students can do based on their demonstrations of learning. It also appears to challenge her capacity to evaluate how best to deepen student mastery of content and skills as she struggled, during the think-aloud, to provide insights into the type of supports and instructional steps taken to address her students' needs.

Relationship Building

During our conversations with teachers about their student work samples, teachers stressed the importance of forming relationships to effectively support their students and engage in ambitious teaching practices such as formative assessment. Ms. Hamid and Ms. Gonzalez from Mulberry High, and Ms. Jean from Cottonwood High, all noted that they were able to achieve breakthroughs in student learning and engagement with PBA tasks once they achieved a connection with their students:

> Ms. Hamid: *It was just such a privilege to be a part of that aspect of her life, and we have just such a unique connection now, I think, because of this [PBA] experience. Like I said, she's one of those kids that's pretty closed off. She doesn't really share anything personally about herself. She's a hard worker. She's a great student, but, like, she's business. You know what I'm saying? And because she chose to be vulnerable with me and share this with me – and that was one of her concerns too at the very beginning of this... She's like, "I'm writing this essay...but I'm not a vulnerable person. I'm not emotionally vulnerable." And I said, "Well, you chose this prompt, and this prompt asks you to be vulnerable." And I said, "So either choose a different prompt, or you're going to have to step into discomfort because, {laughs} you know, it's what it requires." And...it was just such a powerful experience for both of us.*
>
> Ms. Gonzalez: *I really appreciated her [written] reflection [on her work product]…I thought she was so honest and so hard on her sweet self that I'm like, "Ugh, it's okay to be shy." You know? But this online learning environment was really hard. And she [shared with me], "I'm good at doing work and turning stuff in, but I'm not good at communicating with others." And [since this reflection shared back in September] she has really grown in her communication with me and others.*
>
> Ms. Jean: *I am so happy to see where she's going, what she's doing because now she feels okay talking to me and expressing what she thinks is happening without feeling like somebody's going to call her stupid, and I sense that a lot of that comes from home. I've talked to some teachers [asking], "What's going on, just to get some background." So once I made an effort to [reach out to her]…it seemed like we're in a different place, and this last lab was, I think, further proof of that, that I could communicate with her, and she could feel free to give answers that truly [reflected] what was going on in her head.*

In the above excerpts, these three teachers highlight moments where they personally connected with individual students and this, in turn, supported their capacity to better tailor supports for those students. In other words, these relationships deepened their ability to engage in ambitious teaching practices by enriching the meaning-making process in learning with their students, and by providing them with important context to better situate the social context and personal backgrounds influencing the work each student produced. In contrast to the other three teachers, Ms. Strauss from Cottonwood, who struggled with providing supportive instruction for students to engage with the PBL activities and tasks, did not highlight the personal connections built with students she elected to focus on during the think-aloud. Although in a later conversation, she did acknowledge the importance of building relationships in the classroom with students, she did not mention this as a critical lens for helping her contextualize the information gleaned from the student work samples reviewed.

Impact of COVID on ambitious teaching practices

The think-aloud data provided another data source for understanding how the pandemic impacted each teacher's ability to carry out ambitious teaching practices. The two excerpts taken from Mulberry and Cottonwood illustrate the pandemic-related challenges these teachers experienced in attending to the needs of the students that they discussed in the think-aloud:

> Ms. Hamid: *I think one of the biggest challenges with this kid has been, you know, he's been online the whole time. I don't have a personal connection with him. As part of his personal challenges, he does not like to turn his camera on. I think I've seen his face. Maybe, maybe I can count on one hand the number of times that I've gotten to see his face because when he does turn his cameras on, I get this, you know? So he's compliant, but he doesn't want to be on display, you know? I think that lack of personal relationship with him has been a huge barrier for me because usually with that piece I can start to kind of, like, dissect and figure out, like, how are we going to deal with this, you know?*

> Ms. Jean: *We're going full time after break, and I can hardly wait because I want my kids back. I want the time back. I want to be able to sit with [Sierra] and go through this with her so that she can practice giving those longer sentences and greater explanation, more in-depth explanation."*

In these excerpts, we see teachers at both schools discussing their challenges with supporting students remotely. Ms. Hamid notes her challenges in building a relationship with one struggling student when the virtual learning environment has made it difficult to see the student's face. Ms. Jean expresses her frustration with the remote learning model because she desires more in-person time with her student to strengthen her development of essential skills. These types of pandemic-related challenges reaffirm the important role that establishing strong teacher-student relationships play in effectively deploying ambitious teaching practices through PBLs and PBAs. We now turn to findings from focus groups conducted with students attending the classes of these four teachers to unpack the relationship between levels of ambitious teaching practices found and potential benefits accrued to students.

Student Focus Groups

We conducted focus groups with two groups of students at each school who participated in the PBL/PBA work with our case study teachers. Each group involved seven students, and we focused our questions to learn whether implementing PBAs in authentic and relevant ways for students would accrue positive benefits for those students. We gathered student voices to determine whether their learning experiences appeared to benefit them and whether these aligned with the perspectives shared by their teachers. Based on our analyses of the focus group data, two key themes emerged: 1) students experienced deeper learning experiences in classes where more ambitious teaching practices were observed; and 2) students experienced greater difficulty fulfilling the expectations for the PBL and PBA work amidst a health pandemic. We address each theme below.

Ambitious Teaching Practices Leading to Deeper Learning Experiences for Students

We received two contrasting sets of perspectives from students split between the two schools. At Mulberry, where we observed how two teachers enacted ambitious teaching practices to offer authentic and

relevant learning and assessment experiences for students, student voices confirmed the authenticity and relevance of those experiences. At Cottonwood, where we observed the other two case study teachers struggling to enact ambitious teaching practices, we received student input suggesting that their learning experiences with PBLs and PBAs largely generated frustration and disappointment.

At Mulberry, the students in the focus group expressed that they felt both challenged and supported by their teachers when completing the PBAs. Students were asked to contrast their experiences to other non-PBL classes, and we received unanimous input from this group that the PBL learning model with embedded PBAs allowed them to explore topics that were meaningful to them and was their "most exciting class" this school year. The students also highlighted essential skills that they developed by completing the PBA tasks, such as gaining information literacy, collaboration, and self-regulation. The following excerpts from four out of the seven students interviewed at Mulberry help illustrate this point:

> Miriam: *I really enjoyed the Capstone class because I like to research weird topics that, like, I wouldn't learn…in a normal school day. Like, I [looked at] the relationship between illiteracy and incarceration. That's something I'd never learn, but I learned so much from it that I really enjoyed being able to learn about what I wanted to learn about…*
>
> Desiree: *I really like my Capstone class because I'm a very passionate person, and so I get to pick my own topic. So, last semester, I did a topic on how the justice system is corrupt. And I looked at all these cases where people were stereotyped by race, religion, and I felt like I could really bring [them] to life. And compared to my other classes…I feel like my teachers [in traditional classes] don't know what they're doing. Like, they just throw work at us and leave us alone for the rest of the day. Like, they don't interact with us. We don't have any type of communication, whereas with Ms. Hamid, we get to meet with our peers. I really like Ms. Hamid's class compared to the other ones that I have…*
>
> Cynthia: *For me…time management was the main [essential skill] that I learned through all this and also being able to find trustworthy sources [to support my research].*
>
> Amanda: *I feel like I improved on public speaking…I've always been nervous about speaking in front of people, which I feel like everybody is. I feel like I improved on that a lot and just, like, how to organize things.*

We selected these excerpts since they illustrate different types of benefits students gained from participating in PBLs and PBAs. In the first two excerpts, both students (Miriam and Desiree) highlight how meaningful it was for them to research topics of interest to them, and how this motivated their engagement and learning in this class. Desiree adds how this more engaging approach that taps into their interests contrasts with their traditional classes where work was "thrown" at them, and they experienced minimal interactions with other students and teachers. The other two students (Cynthia and Amanda) speak to important essential skills cultivated due to having completed tasks assigned through the PBL. The acquisition of these skills provides some evidence of deeper learning taking place since these types of skills can transfer and apply beyond their application for an English Language Arts class. This and other input received from students at Mulberry appear to support our student conjectures that this work can lead to a student-centered experience for deepening PWR skills and knowledge.

However, when reviewing the feedback received from students at Cottonwood, students there expressed frustration with their PBL and PBA learning experiences. Ms. Strauss's students pointed to communication issues that made them feel uncomfortable asking their teacher for help, and feeling unclear on the expectations for completing their PBAs. In contrast, Ms. Jean's students understood the goals and expectations set for the PBLs and PBAs, but struggled to meet those expectations due to not having built up prior knowledge and skills to successfully engage with the learning activities and assessments. The below excerpts highlight the varying types of frustration that surfaced from these classes at Cottonwood:

> Antonio: *It's so inconsistent…we don't know what to do [because the expectations are unclear], and [Ms. Strauss] gets upset with us. Or she gets annoyed by us asking more questions, or at least it feels like she gets annoyed. I felt like it was more rude for me to ask her for help on something…or if I could get any help because it was just difficult. She's not always going to help you is the best way I could probably say it. She will not. If you're lucky on a certain day and she helps you, well, then you better get as much help as you can because the next day you probably won't get any. So we just wasted a whole hour, and [she's] going to get mad for us, like, being behind or something."*

> Ana: *I asked Ms. Strauss if she could help me with my essay, and for like about three times, she ignored me. And when I emailed her three times asking what do I need to write about, like [and] what is [the] purpose…I understand it was my capstone, but she wanted us to say what it takes to make a good capstone…I kept bugging her and bugging her because it was just – I needed to get a teacher's perspective on what we were doing because, like, she was the one who was going to judge it. And she just ignored me for the entire class.*

> Oliver : *Most of the time in [Ms. Strauss's] class, we're working independently…we don't really get help or just – she expects us to do, like, everything by ourselves. That's how I feel.*

> Aaron: *With Ms. Jean, I really liked the new projects, but I feel like sometimes she expects a little bit too much from us. Like, she goes over the project with us and stuff like that, but I feel like there's still some information that we need to know to actually get it done. But other than that, I like [the projects] so far. She doesn't grade too harshly. And it's something new to try, but that's about it.*

We selected these excerpts since they point to different underlying issues impacting these classes at Cottonwood. In the case of the first three excerpts from students in Ms. Strauss' class, they communicated similar sentiments about the lack of meaningful classroom interactions, the lack of supports received as well as the lack of general expectations set to help students understand the purpose and goals for the activities and assessment. For these students, the success criteria were not made clear to them, and their comments highlighted the need for explicit instruction to be given to guide them in doing the work.

The last excerpt reflects a sentiment shared by others in Ms. Jean's class. The students enjoyed the authentic nature of the tasks provided and understood the expectations for the course. However, these students indicated that their frustration stemmed from lacking the tools and knowledge to successfully complete their projects or assessments. This frustration in part appears to be consistent with what we observed in Ms. Jean's classes where activities and formative strategies applied did not build on students' prior knowledge, or uncover their thinking to help better direct or re-direct instruction.

We return to the comments from students in Ms. Strauss' class, since these data points spotlight a classroom where equity-centered assessment and learning opportunities are not happening for students. The first three excerpts, as well as comments from other students attending Ms. Strauss' class, described the students being blamed for their shortcomings. That is, they agreed that the teacher faulted them for not meeting the expectations of the PBA tasks. Yet these students were also aware that they did not receive clear expectations for the tasks and were also not receiving adequate supports from their teacher to successfully complete those tasks. This phenomenon of transferring blame onto students has been widely documented (e.g., see Thompson et al., 2004; Nespor, 1986; Shields et al., 2005; Torrance, 2017), and within this and other studied contexts, such a dynamic can foster a hostile learning environment that undermines equity efforts, as well as student learning and growth.

Challenges to learning during a pandemic

Across both schools, students noted distinct challenges with a pandemic-induced virtual environment that interfered with the PBL experiences. At Mulberry, students noted that these challenges surfaced when the class shifted to a hybrid learning context. At Cottonwood, the students in Ms. Strauss' class observed that the virtual spaces created by the pandemic made it even more difficult to obtain the support that they were already lacking:

> Antonio [Cottonwood High Student]: *And then for some of us [we] were in quarantine…[since] we were exposed to COVID. It was so hard to even work on [the PBA] because we never got any help. Yes, I could Zoom. Yes, I could Zoom with her, but it's a lot different when, during a Zoom, she's trying to show something else all the time…*

> Luther [Mulberry Student]: *There's only four kids in the class, the in-person class. So - and I feel like I kind of thrive when I'm around other people. That's the only downside for me really… we have a bigger classroom for people, but it's like some people are still fully online, so we only have four people coming in [to class].*

> Cynthia [Mulberry Student]: *I do have to agree with Luther with only having four people sometimes. I think it was either Monday or yesterday there were only two people in the class, which [makes the class]… kind of boring almost.*

When we asked Cynthia whether her class that employs PBAs still stands out above and beyond her other courses, even despite the COVID induced difficulties in her learning environment, she responded "*Definitely.*"

The sentiments shared by Luther and Cynthia resonated with the other students in the focus group from Mulberry who periodically felt somewhat disengaged in the hybrid context. Yet, students at Mulberry still maintained that they felt the learning experiences with the PBLs and PBAs were richer when compared to their other classes. In the words of another student from Mulberry, "the [PBL and PBA] work was really helpful during COVID, because everything's messed up right now," or that this work gave her a focused learning reprieve from the pandemic.

The students from Cottonwood described a different experience from the Mulberry students about the remote and hybrid learning experiences. Antonio from Ms. Strauss' class noted that the pandemic only exacerbated the problem of insufficient support structures in the classroom. The input from Antonio resonated with the other students in the focus group who participated in Ms. Strauss' class. Ms. Jean's

students suggested that, in general, these types of PBL activities and assessments may be better suited for in-person rather than virtual spaces. This suggestion was connected to the idea that they thought Ms. Jean would be better positioned to help them build requisite skills and knowledge for this work under an in-person learning environment. This input left us wondering whether Ms. Jean's students' feedback about undertaking the PBL and PBA work in remote and hybrid conditions might change if, like the Mulberry teachers, Ms. Jean could apply stronger formative assessment practices to better direct and guide the teaching and learning activities. That is, if Ms. Jean could leverage those practices to help discern how best to meet the varying needs of students, her students may have felt more successful in engaging with the work within a virtual environment.

Taken together, the data points collected to explore the second research question suggest that the PBAs, when embedded in authentic learning activities such as those offered by PBLs, hold great potential for teachers to identify and attend to student learning needs as well as to attend to the social-emotional needs of students – especially within the backdrop of a global pandemic. Yet the findings in this section reveal that the PBLs and PBAs are instructional devices and tools that can be effectively used to either lead to observable outcomes as indicated in our student and teacher conjectures or can potentially work against the interests of students. If teachers lack the instructional expertise and repertoire to supplement the use of learning activities and tasks with ambitious teaching practices, the argument that these types of authentic activities and assessments can provide teachers with better information than standardized tests and other traditional approaches is moot. In the next closing section, we discuss the implications from these case studies within the context of the current pandemic, equity-centered teaching and learning, and assessment literacy initiatives.

Discussion: Implications

As educational leaders assert the importance of maintaining the role of assessments during the pandemic and many educators have had to quickly pivot to instruct in hybrid and virtual spaces, there is now an important opportunity to consider how the role of performance-based curriculum embedded assessments can be leveraged to promote deeper learning in challenging learning conditions (Shepard, 2019; Vossoughi & Bevan, 2014). The results from our case studies provide localized evidence that highlights the promising aspects of using PBAs embedded in PBL experiences, even during a crisis period. However, the results also point to the pitfalls of having some teachers use this approach, particularly when schools lack collaborative professional learning structures, when teachers lack a strong repertoire of formative assessment practices, or when the design of the PBLs and PBAs lack equity-centered principles. We first discuss the promise of this approach within the background context of the pandemic before discussing the challenges of using PBAs embedded in PBLs.

PBAs During the Pandemic

When examining the data from Mulberry High, the results appear to support the research-based set of conjectures about this project. When authentic learning activities and tasks are well-designed, these can lead to higher levels of student engagement, demonstrations of content mastery and essential, PWR skill development, as well as fostering student-centered learning environments (Kingston, 2018; Black and Wiliam, 2009; Evans, 2019; Guha, 2018; Stiggins, 2006). Despite the difficulties encountered by the teachers at Mulberry to do this work in both fully remote and hybrid settings during a health crisis, engaging students in the PBL units with embedded PBAs still produced rich dialogue and exchanges in the classroom, as well as yielded

important qualitative insights about what students know and can do. In the interview with Mulberry teachers, both teachers stressed how this type of authentic learning and assessment work is critical for "promoting equity," and how this work needs to be elevated. Additionally, both teachers noted how the departure of this work from traditional teacher-centered modes of instructional delivery is essential for motivating students especially during a crisis. As Ms. Hamid notes about traditional teacher-centered modes of instruction and assessment: "I see the struggles that my students face on a daily basis in these other [traditional] classes, and they feel so defeated… and I feel [that] we have the tools. We have a lot of research that shows us what works, and I just don't understand why we continue to do the same [teacher-centered] thing over and over again and, you know, in some cases even disregard the things that work with kids!"

At Cottonwood, Ms. Jean expressed a similar view as Ms. Hamid about the role of PBLs with PBAs to better engage and meet the learning needs of students during this pandemic period compared to traditional approaches. She noted: "The standard way of teaching is way worse in a virtual environment than doing the PBL work…I know I was frustrated, but it was 100 times better than using a [teacher-centered] approach because it engages students by having them do hands-on work…and to show their work."

The supportive sentiments expressed by three of the four teachers about the PBLs and PBAs were echoed and supported by Mulberry students. That is, PBAs embedded in PBLs can help students develop PWR skills while mastering content and increasing student engagement through authentic, real-life tasks. At Mulberry, students reported feeling more engaged in classes that employed curriculum-embedded PBAs, and one student even described those classes as a "helpful distraction" from all of the challenges that the first year of the health-crisis presented. Students highlighted that the ability to personalize their demonstration of content mastery through the selection of their research topics was a key, enjoyable feature of their class that employed the use of curriculum-embedded PBAs. The students at Mulberry also reported feeling motivated and supported by their interactions with their teachers and other students, through the PBA process, which helped them build more confidence in their abilities despite the ongoing pandemic.

Based on the data received mainly from Mulberry, the findings attest to how this approach can foster an equity-centered learning environment during a crisis period that has been documented to exacerbate inequalities on a global scale (Banerjee & Gooptu, 2021; Trinidad, 2021; Hall et al., 2020). The two teachers at Mulberry reported using the learning activities and assessments to inform the type of supports meant to facilitate students' mastery of content and developing PWR skills.

This input was confirmed by students who reported feeling supported and empowered by the autonomy given to them by their teachers to pursue topics that were meaningful, authentic, and rooted in real-world settings. The findings at Mulberry provide a proof point that bolsters the argument made by many educational researchers that intentionally designed PBAs can promote a more equity-centered learning environment (Winfield, 1995; Afflerbach et al., 1995; Darling-Hammond, 1994; Aschbacher, 1992; Koretz et al., 1992). The findings also support the points made by Furtak et al. (2021) and others (e.g., Jankowski, 2020) that these types of authentic assessments are more optimal for improving teaching and learning during the pandemic since, as seen in Mulberry, these can supplement and even amplify meaningful learning experiences.

When PBAs can Backfire: Implications for Equity

However, as seen in the case of the other school site, when the PBLs are not supported by collaborative learning communities, are not designed well and/or are not supported by strong instructional and formative assessment practices, PBAs can also reinforce and create inequalities. The observation, think-aloud and student interview data collected from Cottonwood High suggests that when teachers use authentic learning activities and tasks without employing effective instructional strategies to promote discourse or solicit student feedback and reasoning, these activities and tasks may no longer feel either authentic or relevant for students. In effect, these students lose out on prime opportunities to develop PWR skills. For teachers sharing a similar profile to Ms. Strauss, and who struggle to implement basic pedagogical practices such as scaffolding and providing explicit instructions for guiding the learning activities and tasks, the PBL work can result in students not receiving enough structure, instruction, or clear, rigorous expectations around their PBA final product. In the case of teachers like Ms. Jean who do not have a strong repertoire of formative assessment practices, the activities and tasks may feel authentic or relevant for students, but weak feedback loops established between teacher and students can impede the capacity for students to improve or to gain the confidence to engage in this work.

As a result of the weaker instructional and formative assessment practices undergirding the PBL and PBA work at Cottonwood, the majority of Cottonwood students participating in the focus group characterized their experiences with the learning and assessment activities as lacking structure and rigor. They expressed feeling under-supported to achieve the expectations of their teachers and, in the case of Ms. Strauss's students, they reported feeling confused and unclear on the task expectations altogether. Although students were able to develop some PWR skills in the process of completing their tasks, all students in Ms. Strauss' class who participated in the focus group agreed that they felt class "time was being wasted" due to the lack of coherent and clear instruction provided on how to successfully demonstrate content mastery through the PBAs. Additionally, other students experiencing the PBLs and PBAs in Ms. Jean's class noted that this approach may not "be the best" way to learn content especially during a pandemic. These sentiments came from students who felt they did not have enough foundational skills and knowledge built to successfully demonstrate their learning on the PBAs.

The student voices shared about the PBL and PBA experiences at Cottonwood are particularly disconcerting since the majority of the school's population consists of students of color. The findings from Cottonwood provide an example where the use of these authentic learning activities and tasks did not appear to foster an equity-centered experience for these students. Cottonwood also provides a case study example of a school where teachers can have good intentions and be dedicated to equity goals, but end up reinforcing or generating inequalities when their practices take place in a closed community (de Jong, et al, 2019). Considering how tightly intertwined the PBAs are with disciplinary content and essential skills, we next consider the implications for improving this work within the context of "assessment literacy" efforts structured to improve teacher understanding and use of assessments to evaluate learning.

Implications for Assessment Literacy

Assessment literacy efforts taking place in school districts are often implemented as a solution for strengthening the capacity of teachers to evaluate student learning (Popham, 2018). Within the context

of classroom assessment, particularly as it applies to formative assessment, the knowledge focus for an assessment literacy initiative should be prioritized not on learning about the technical properties of the PBAs, but rather, on the content represented on the tasks combined with the disciplinary content knowledge, skills, and the instructional repertoire that teachers can draw upon to make valid inferences and interpretations about what students know and can do. Our perspective aligns with Shepard's (2020) pointed criticism about ongoing and standing assessment literacy initiatives focused on building teacher's knowledge base about measurement principles. As Shepard notes:

> *"Everyone agrees on the cardinal measurement principles of validity, reliability and fairness, but the realizing of these ideas should be quite different in classroom contexts. Instructionally, reliability would be experienced by students as consistency in the criteria used to give feedback rather than test-retest correlations. To support learning, fairness should attend to culturally relevant pedagogy and honoring of students' home backgrounds rather than statistical screening of test questions. In general, measurement versions of assessment literacy focus on formal test instruments instead of informal instructional processes by which student understandings are identified and built upon" (2020, Definitions, intentions, and limitations section, paras. 1 and 2).*

For this initiative focused on improving teaching and learning experiences through PBAs, "reliability" as framed by Shepard needs to focus on the consistency of the criteria used to provide feedback both within the context of the informal formative strategies applied by teachers as well as the scoring rubrics used in the classroom summative context to convey expectations for students. Within the context of this case study, we also see the validity of the PBAs corrode in the eyes of a group of students partly due to the lack of consistency applied in the formative strategies used by the teacher to provide feedback, as well as the evaluative rubric used to assess student work products. This low level of 'reliability' is partly due to the lack of pedagogical content knowledge and skills used by one teacher (Ms. Strauss) to guide and support students with the learning activities and assessments. We acknowledge that considering the technical properties of these tasks is still important, particularly when PBAs will be later used to inform decisions such as determining whether a student meets graduation requirements. However, we question the utility of these technical topics in assessment literacy initiatives provided to teachers and question the extent knowledge of these measurement principles directly transfers to improving classroom assessment practices.

Considering how intimately tied these PBLs with PBAs are with curriculum and instruction, future assessment literacy efforts supported by either the state or districts will likely need to prioritize strengthening relevant pedagogy through the application of formative assessment practices connected to distinct disciplinary areas. As seen in this case study for one school (Mulberry), formative assessment strategies played a significant role during this pandemic period by: 1) maintaining student focus on important content and essential skills during a disruptive school year; and 2) providing teachers with targeted and more actionable data from in-the-moment occasions and PBA tasks to aid in the learning process. Building the instructional and formative assessment capacity of teachers to use these PBAs more effectively would allow these types of authentic learning and assessment initiatives to persevere through future major disruptions such as the pandemic and to sustain a focus on equity-centered practices.

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About CADRE

The Center for Assessment, Design, Research and Evaluation (CADRE) is housed in the School of Education at the University of Colorado Boulder. The mission of CADRE is to produce generalizable knowledge that improves the ability to assess student learning and to evaluate programs and methods that may have an effect on this learning. Projects undertaken by CADRE staff represent a collaboration with the ongoing activities in the School of Education, the University, and the broader national and international community of scholars and stakeholders involved in educational assessment and evaluation.

Please direct any questions about this project to: elena.diazb@colorado.edu.

Attachment A

Note: The below items represent general descriptors of “look-fors” in the observation protocol and does not reflect the actual rubric used.

Formative Practices to Strengthen Student Learning

- Activities are connected to larger goals or lessons beyond the day’s class period.
- Criteria for success to support learning
- Questioning strategies to elicit evidence of student learning
- Teacher provides opportunity for students to take action based on feedback.
- Peer feedback and assessment
- Extended thinking during discourse
- Self-assessment as a means to engage in metacognitive skills

Authentic-making to Design Performance-based Tasks and Activities

- Activities include tools that are used outside of school (e.g., terminology, technology, resources).
- Students plan for, make, design, create, or share a product or performance.
- Teacher provides opportunities for students to learn skills to create/revise a product or performance, or prepare something that they will continue with in future activities (evidence of iterative production over time).
- Students provided with opportunities to express themselves through multiple modes (writing, image, sound, video, movement, live performance).
- Teacher provides instruction in learning ‘how’ to use/develop literary or writing skills or strategies or processes or provides scaffolds and supports to develop these.
- Teacher uses different representations (modes and media) to teach content (learning about).

Integrating Essential Skills to Foster a Strong Classroom Culture

- Activities designed or materials provided and used promote focal essential skills.
- Classroom environment appears comfortable and safe for learning and risk-taking.
- Students show respect for each other’s ideas, opinions, and backgrounds.
- Teacher provides opportunity for students to reflect on progress, goals, feedback, and/or suggested actions, and feelings - processes and product.
- Students drive choices to engage interests via choice of product /content / mode of expression/process.

References

Afflerbach, P., Kapinus, B., & DeLain, M. (1995). Reading assessment: Equity and performance-based assessment: An insider's view. The Reading Teacher, 48(5), 440-442. http://www.jstor.org/stable/20201461

Aschbacher, P. R. (1992). Issues in innovative assessment for classroom practice: Barriers and facilitators. CSE Tech. Rep. No. 359. Los Angeles, CA: National Center for Research on Evaluation, Standards, and Student Testing (CRESST). https://cresst.org/wp-content/uploads/TECH359.pdf

Ball, D. L. & Forzani, F. M. (2009). The work of teaching and the challenge for teacher education. Journal of Teacher Education, 60(5), 497-511.

Banerjee, P., & Gooptu, S. (2021). COVID-19 and Inequities in education: An Indian context. In L. Kyei-Blankson, J. Blankson & E. Ntuli, (Eds.), Handbook of research on inequities in online education during global crises (pp. 362-385). IGI Global.

Bell, B. & Cowie, B. (2001). The characteristics of formative assessment in science education. Science Education, 85(5), 536-553.

Black, P. & Wiliam, D. (2009). Developing the theory of formative assessment. Educational Assessment, Evaluation and Accountability, 21(1), 5–31. https://doi.org/10.1007/s11092-008-9068-5

Boardman, A. G., Garcia, A., Dalton, B., & Polman, J. L. (2021). Compose our world: Project-based learning in secondary English language arts. New York, NY: Teachers College Press.

Condliffe, B., Quint, J. Visher, M. G., Bangser, M. R., Drohojowska, S. Saco, L., Nelson, E. (2017). Project-based learning: A literature review – Working paper. MDRC. https://www.mdrc.org/sites/default/files/Project-Based_Learning-LitRev_Final.pdf

de Jong, L., Meirink, J. & Admiraal, W. (2019). School-based teacher collaboration: Different learning opportunities across various contexts. Teaching and Teacher Education, 5(86). https://doi.org/10.1016/j.tate.2019.102925

Darling-Hammond, L. (1994). Performance-based assessment and educational equity. Harvard Educational Review, 64(1), 5. https://colorado.idm.oclc.org/login?url=https://www-proquest-com.colorado.idm.oclc.org/scholarly-journals/performance-based-assessment-educational-equity/docview/212248717/se-2?accountid=14503

Evans, C. M. (2019). Student outcomes from high-quality project-based learning: A case study for PBLWorks. National Center for the Improvement of Educational Assessment. https://www.pblworks.org/sites/default/files/2020-01/PBLWorks%20HQPBL%20Teacher%20Case%20Study%20Report_FINAL.pdf

Fullan, M. & Quinn, J. (2015). Coherence: The right drivers in action for schools, districts, and systems. Thousand Oaks, CA: Corwin Press.

Furtak, E., Shepard, L., Penuel, W. R. (2021) Going forth with standardized tests may cause more problems than it solves. The Conversation. Retrieved from https://theconversation.com/going-forth-with-standardized-tests-may-cause-more-problems-than-it-solves-155231

Guha, R. (2018). Reimagining assessment: The power and promise of performance assessments. Next Generation Learning Challenges (NGLC). https://www.nextgenlearning.org/articles/the-power-and-promise-of-performance-assessments

Hall, J., Roman, C., Jovel-Arias, C. & Young, C. (2020). Pre-service teachers examine digital equity amidst schools' COVID-19 responses. Journal of Technology and Teacher Education, 28(2), 435-442. https://www.learntechlib.org/primary/p/216180/

Jankowski, N. A. (2020). Assessment during a crisis: Responding to a global pandemic. Urbana, IL: University of Illinois and Indiana University, National Institute for Learning Outcomes Assessment. https://www.learningoutcomesassessment.org/wp-content/uploads/2020/08/2020-COVID-Survey.pdf

Kingston, S. (2018). Project-based learning & student achievement: What does the research tell us? PBL Evidence Matters. 1(1), 1-11. https://files.eric.ed.gov/fulltext/ED590832.pdf

Koretz, D., Stecher, B., & Deibert, E. (1992). The Vermont portfolio assessment program: Interim report on implementation and impact, 1991-92 school year. CSE Technical Report, 350. National Center for Research on Evaluation, Standards, and Student Testing (CRESST).

Lampert, M., & Graziani, F. (2009). Instructional activities as a tool for teachers' and teacher educators' learning. Elementary School Journal, 109(5), 491-509.

Montenegro, E., & Jankowski, N. A. (2017). Equity and assessment: Moving towards culturally responsive assessment (Occasional Paper No. 29). Urbana, IL: University of Illinois and Indiana University, National Institute for Learning Outcomes Assessment (NILOA).

Nespor, J. (1986). Trouble at School: A Case Study of the Economy of Blame. Urban Education, 21(3), 211–227. https://doi.org/10.1177/004208598602100301

Popham, J. (2018). Assessment literacy for educators in a hurry. Alexandria, VA: ASCD.

Ruiz-Primo, M.A. & Furtak, E.M. (2006). Exploring teachers' informal formative assessment practices and students' understanding in the context of scientific inquiry. Journal of Research in Science Teaching, 44(1), 57-84.

Shepard, L. A. (2019). Classroom assessment to support teaching and learning. The ANNALS of the American Academy of Political and Social Science. 683(1), 183-200. https://doi.org/10.1177/0002716219843818

Shepard, L. A. (2020). Stop the harms of testing: Assessment literacy for teachers should be tied to innovative instruction. National School Boards Association. Retrieved from https://www.nsba.org/ASBJ/2020/December/stop-harms-testing

Shields, C. M., Bishop, R. & Mazawi. A. E. (2005). Pathologizing practices. New York: Peter Lang.

Stiggins, R. (2006). Assessment for learning: A key to motivation and achievement. Edge, 2(2), 3-19. http://downloads.pearsonassessments.com/ati/downloads/edgev2n2_0.pdf

Thompson, G. L., Warren, S., & Carter, L. (2004). It's not my fault: Predicting high school teachers who blame parents and students for students' low achievement. The High School Journal, 87(3), 5-14. Retrieved May 10, 2021, from http://www.jstor.org/stable/40364292

Torrance. H. (2017). Blaming the victim: assessment, examinations, and the responsibilisation of students and teachers in neo-liberal governance. Discourse: Studies in the Cultural Politics of Education, 38(1), 83-96. DOI: 10.1080/01596306.2015.1104854

Trinidad, J. E. (2021). Equity, engagement, and health: school organisational issues and priorities during COVID-19. Journal of Educational Administration and History, 53(1), 67-80. DOI: 10.1080/00220620.2020.1858764

Vossoughi, S., & Bevan, B. (2014). Making and tinkering: A review of the literature [White paper]. Informal Science. https://sites.nationalacademies.org/cs/groups/dbassesite/documents/webpage/dbasse_089888.pdf

Winfield, L. F. (1995). Performance-based assessments: Contributor or detractor to equity? In M. T. Nettles & A. L. Nettles (Eds.), Equity and Excellence in Educational Testing and Assessment (pp. 221-241). Springer Netherlands.