This School is Made for Students: Students’ Perspectives on PBL

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Abstract

Project-based learning (PBL) is an increasingly popular pedagogical method in K-12 settings. Students exposed to this approach have demonstrated higher academic performance than their peers who have not been exposed, as well as positive rates of self-efficacy and other non-academic skills. Using qualitative methods, including observation, artifact collection, interviews, and focus groups, this research explores biology students’ perceptions of their project-based learning experiences. In particular, we leverage a student focus group to understand how students perceive their learning experience. In this focus group, students perceive project-based learning as a positive influence on their agency, self-efficacy, and learning experience as a whole. Significantly, students’ accounts reveal how their positive perceptions of PBL correspond with purposefully designed elements of project-based learning. This article offers implications for teachers and educational leaders interested in how students perceive project-based learning and how they might integrate project-based learning into their classrooms.

Keywords Project-based learning · Qualitative research · Student voice and choice · Student-centered learning

Introduction

Project-based learning (PBL) is an increasingly popular pedagogical method that has had a significant impact on teaching and learning practices (Kingston, 2018). The student-centered approach to designing learning environments (Krajcik & Blumenfeld, 2006), which fosters opportunities for students to solve authentic and ill-defined problems, has been credited with increases in academic achievement and students’ overall motivation and self-efficacy (Grant, 2011; Shin, 2018). PBL has also been found to support learning for students who may be furthest from opportunity (Kingston, 2018).

Academically, K-12 students exposed to PBL have experienced achievement in a range of content areas. Social studies students, for example, experienced statistically significant higher growth in learning outcomes compared to their peers in classroom settings without inquiry-based pedagogical methods (Duke et al., 2016; Hernandez-Ramos & De La Paz, 2009). Similarly, students who participated in project-based science curriculums have shown significant improvement in learning goals (Shwartz et al., 2008) and outperformed students who were not exposed to these curriculum approaches (Harris et al., 2014). In math and reading, students experiencing PBL have performed as well or better on assessments than students who have not received PBL instruction (Duke et al., 2016; Koparan & Guven, 2015). In addition to academic skills, Fitzgerald (2020) suggests that PBL can support students’ self-efficacy, social and emotional skills, collaboration skills, and other non-academic skills.

Student Perceptions of PBL

Despite the myriad of studies conducted on teachers’ and students’ experience of project-based learning, studies focused solely on students’ perceptions of PBL is limited (Grant, 2011; Virtue & Hinnant-Crawford, 2019). As such, this research examines how students articulate the educational benefits of their project-based learning as a method to offer formative design opportunities that can shape their project and curriculum as a whole. Although scant, scholars have explored students’ perceptions of PBL. Scogin et al. (2017) interviews with students found that the learners perceive school to be more enjoyable while collaborating with other learners and engaging in the project-based curriculum. Similarly, Sahin and Top (2015) found that students perceived an improvement in executive functioning skills, communication skills,
overall self-confidence when exposed to project-based learning. Fitzgerald (2020) and Morrison et al. (2021) PBL research identified students’ perceptions of improved social-emotional skills and their feelings of being capable, independent, creative, and critical. Despite students’ articulating their learning and the value of their learning experience, their voices are frequently overlooked when designing learning experiences. Virtue and Hinnant-Crawford (2019) describe that educational research frequently:

includes the voices of students, and the constructivist paradigm acknowledges their perception of reality as valid. However, simply listening to student voice and not acting on its instruction is insufficient when considering or advocating for or against a particular approach to education. (n.p)

With project-based learning, we argue that educators can include their students’ voices throughout the design of their learning. As PBL continues to be integrated into classrooms across all grade levels, it is worthwhile investigating how students articulate the benefits of a PBL to engage them in deeper learning and curriculum design opportunities. Recognizing that students’ voices are rarely leveraged for the development of curriculum (Grant, 2011), this study purposefully explores students’ perceptions of PBL to solicit their input and incorporate their values into the development of future PBL lessons at Community Neighborhood School.

Over 16 weeks, we immersed ourselves in a biology course at Community Neighborhood School (CNS). During this time, we observed classroom activities, including student–student and student–teacher collaborations. Additionally, we leveraged a student focus group to address our overarching research question: How do biology students at CNS perceive their project-based learning experiences?

In this article, we present our interpretation of students’ perceptions—their interpretations and understandings of their learning experiences—of PBL in three themes. Additionally, through the lens of our student participants, we frame our observations of students’ PBL work to offer suggestions for practice and future research at CNS as well as in similar learning settings. In the following section, we briefly explore our conceptual framing before providing additional context for this research.

**Conceptual Framing**

**Project-Based Learning and Design Thinking**

Psychological research and theory suggest that students can improve both content and thinking skills through problem-solving learning opportunities (Hmelo-Silver, 2004). As such, leveraging inquiry-driven curriculums encourages learners to go beyond learning simple facts and integrate information across multiple domains, applying their knowledge and recognizing why the knowledge is useful (Hmelo-Silver & Eberbach, 2011). Inquiry-driven pedagogical approaches resulting from a constructivist paradigm foreground these learning experiences, and in turn, encourage active participation while engaging in authentic inquiry (Duffy & Raymer, 2010).

Project-based learning aligns with design thinking as students work collaboratively to solve complex problems through in-depth learning processes while meeting the needs of community stakeholders (Kröper et al., 2010; Brown, 2009; Panke, 2019). The goals of integrating design thinking into PBL learning include fostering civic literacy, empathy, cultural awareness, and risk-taking, among others, as students identify problems and work towards solutions as they play the role of an expert throughout the process (Sharples et al., 2016). By engaging learners in ill-defined authentic problems that require them to empathize with the problem, design thinking can be considered a vital component of an effective project-based learning experience.

Community Neighborhood School uses a popular PBL coaching program, namely Magnify Learning (https://www.magnifylearningin.org/) to support their teachers’ professional development and implementation of projects. Representative of inquiry-driven pedagogical approaches, Magnify Learning (n.d.) defines PBL as a framework for teaching and learning where students acquire content knowledge and skills based on an authentic challenge or need. The non-profit organization emphasizes the employability skills gained from project-based learning, including critical thinking, communication, and creativity. Student voice and choice and the involvement of community partners and publicly presented products, as well as an ongoing reflection process, formatively shape their projects and are all features of an authentic PBL. In the following section, we elaborate on the context of this research and our methodological approach.

**Method**

**Research Setting**

Throughout 2020–2021, we partnered with Community Neighborhood School (CNS), a small charter school located in the southeastern USA. As a newly established school, CNS serves students in grades K-10 and is considered to be a PBL school where the entire curriculum is based on project-based learning principles. CNS is located in a developing neighborhood that is guided by sustainability and conservation principles. As such, CNS is intentionally
environmentally focused and often leverages local environmental issues as opportunities for student exploration. With a community-wide emphasis on sustainability, teachers at CNS frequently seek out “community partners” who are experts on specific environmental issues (e.g., invasive species, wetland destruction, land management). Students work with community partners to develop projects that will help address and alleviate the problem. Using state standards for guidance, teachers work alongside students to facilitate the PBL process, which includes defining the problem, designing solution criteria, conducting solution research, picking a solution, and finally, creating, running, inspecting, and reflecting on the solution selected (Magnify Learning, n.d.). Throughout this process, student voice and choice are presumed to be integrated throughout the project with the teacher providing scaffolds as needed through workshops and individualized attention.

Focal Participants

This research documents our work with Miss Smith and her ninth-grade biology students. Before coming to CNS, Miss Smith was a science teacher at a local “traditional” public school and reported that it was her experiences at that school, where testing and memorization were emphasized, that led her to seek out CNS. Although it has been a transition in terms of how they think about teaching and learning, Miss Smith suggests that PBL provides a more valuable learning experience for students. During our interviews, Miss Smith revealed that although PBL aims to promote student voice and choice in curriculum choices, it can be difficult to include them.

In this article, we primarily focus on the perspectives of five students: Tommy, Sarah, Kristie, Lane, and Rachel (all names are pseudonyms). We focus on these learners because they provide a cross section of PBL experience and participation at CNS. For example, Sarah and Tommy recently transferred to CNS, while Kristie, Lane, and Rachel have attended CNS for several years. Consequently, all five of these students have experience in traditional public schools and they use these experiences to help articulate their perceptions of PBL at CNS. Additionally, in our observations, we also noticed that these students showed different levels of interest in PBL projects. Sarah, for instance, was a bit hesitant to take the lead or be outspoken when working on PBL projects. On the other hand, we found Kristie and Rachel often excitingly working on their projects and encouraging their classmates. Despite the students’ experience and participation at CNS, these students were representative of the whole class and willing to participate in the focus group, and we strive to accurately interpret how these students perceive their project-based learning experience.

Data Collection and Analysis

The data we present in this study originates from a larger ethnographic study (Spradley, 1980; Cresswell, 2013) aimed at better understanding the PBL experiences of teachers and students at CNS. After observing two PBL units in Miss Smith’s biology class, we scheduled a series of semi-structured interviews with Miss Smith aimed at better understanding the challenges they faced as a PBL educator, especially in regard to integrating students’ voices and ideas. Next, we scheduled a semi-structured student focus group with our focal students that took place during a class session when students were finishing up their projects. At this time, our focal participants had already finished their projects, so this provided an opportune moment to interview students without them missing any classwork. The focus group lasted approximately 60 min and was held in a nearby classroom. Importantly, our time spent in their classroom allowed these students to become familiar with us and our research which we believe contributed to the conversational nature of the focus group. During the interview, the students were asked a series of questions about their current and past schooling experiences. They were invited to discuss what they liked about PBL and the projects they completed, answering questions like the following “How does this school compare to your previous school?” “How do the projects you complete connect to life outside of school?” “What do you want your teacher to know about your PBL experience?” Furthermore, students discussed their favorite aspects of engaging with PBL, their role in picking project topics, and the features of PBL that impacted their learning the greatest. For this article, we primarily draw on data from the students’ focus group.

Additionally, we spent a significant amount of time in Miss Smith’s classroom, typically observing the class once a week over the course of their spring semester and collecting over 15 h of video data. This video-recorded data, which captured the collaborative nature of PBL work (Murray-Harvey et al., 2013), served as a secondary data source that supported our focus group interview data. During these collaborative sessions, we had the flexibility to move about the classroom, talk with students, document their work, and informally ask clarifying questions in situ (Fig. 1). We also attended weekly PBL coaching meetings with additional teachers at CNS as they met with a certified PBL coach to get an “insider view” of how PBL projects were implemented across several grade levels.

Our interviews were video-recorded and then transcribed and shared among the research team and Miss Smith to check for accuracy. During data collection, we archived our fieldnotes using the digital platform Slack and used these notes to develop formal analytic memos that guided our analysis. Furthermore, our team relied on the iterative nature of Thematic Analysis (Braun & Clarke, 2006) to provide a
rich account of the students’ experiences. The interviews with Miss Smith and the focus group were iteratively coded by our research team. Initially, members of the team coded the interviews individually and then met to discuss codes. While discussing their interpretation of the students’ perspectives and codes, the team recognized alignment among the codes they had developed. Upon reviewing the codes, the team collaboratively worked to develop the codes into themes. In the following, we share our interpretations of these themes.

Findings

In this section, we present three themes that emerged during our participants’ focus group and that are supported by our classroom observations. Our analysis focalizes on students’ perception of their agency, self-efficacy, and the relational nature of their learning. Although we present these three themes separately, we find that they are very much woven together in the students’ understanding of project-based learning.

Creativity and Freedom

In this section, we present how students perceived more opportunities to be creative with their learning due to project-based learning. We split this section into two parts. First, we illuminate how students perceive their “voice” as valued in the classroom. Next, we identify moments in our classroom observations that supported students’ perceptions of agency and creativity by sharing how students were able to think creatively about an authentic problem and decide on the nature of their project.

“We’re Not Just Learning to Learn”

During our focus group, students at CNS suggested that they had significant agency in their learning experiences. Buzzwords like “voice” and “choice,” commonly associated with project-based learning (Sahin & Top, 2015), were repeatedly mentioned by both the students and Miss Smith. Indeed, Miss Smith would allow students to make decisions regarding what they wanted to include in their final product. Students, in turn, viewed these moments as meaningful learning opportunities, where they could formatively shape the nature of their projects. For example, Lane, a student in our focus group, suggested that students could provide input for their PBLs:

Before I came here [CNS], the teachers told you exactly what you had to do, where like here [CNS], they’re [the CNS teachers] like, this is our PBL, what do you want to do with it? Do you want to contact people (community stakeholders)? Do you want to plan a big event? Do you want to stay small and create like
brochures? How do you want to fix the problem, or how do you want to normalize the problem?

When we queried Lane as to how this flexibility affected her learning, she suggested that it made her more engaged and she was more likely to buy into the curriculum because she felt her voice was heard:

Yeah [I’m more interested], because we’re talking about what we’re interested in doing, it’s not just like ‘Oh, we’re doing this project, you’re going to go make a brochure out of it.’

For Lane, project-based learning allowed students to engage with topics that interested them. Lane was not the only one who spoke to this flexibility though, as this was a resounding message from all of the students we talked with. To provide us with an overall understanding of this “flexibility,” students in our focus group contextualized their perception of their agency by discussing experiences they had at previous schools. One student, Kristie, suggested that PBL made school fun and enjoyable, compared to her last school which was:

Very different, we didn’t have the creative freedom, and it wasn’t - it [the schoolwork] was never student-driven. It was always lectures, and lectures, and lectures, and notes and tests, and it was just not enjoyable.

Rachel and Sarah agreed with Kristie, suggesting that coming to CNS was “eye-opening” for them because they felt they could contribute in ways that would not result in them getting “in trouble,” or “points deducted” from her grade.

Rachel, Sarah, and Kristie’s responses allude to their perception that having any input in their learning experience is valuable. Similarly, Tommy suggested, “When I came here, PBL, and the way they [the teachers] teach things, it’s more focused towards us, and we have to do more work, so, it [the PBL approach] demonstrates more of what I can do.”

We interpreted Tommy’s ideas to mean that he perceived his PBL learning experiences to be focused on his interests and abilities which, in turn, granted him agency and his colleagues’ opportunities to pursue deeper learning compared to their previous schooling experiences.

**Designing for Agency**

The structure of Miss Smith’s PBLs encouraged students to participate and contribute formative feedback in a variety of ways. Indeed, one feature that students spoke frequently about was the authentic problems and driving questions that initiated their projects. Rachel revealed this characteristic while describing how relevant problems initiate projects:

So, here’s a problem that’s actually going on in society, throughout our state, country, the world. And, now we’re going to have you try to figure out ways to help this problem. So, it’s [CNS] definitely more of a thought-provoking school.

Throughout our time speaking with students, they frequently articulated the value of participating in PBLs, just as Rachel did. Significantly, engaging in community issues sparked their interest and learning of wider social, political, and ecological problems. For Rachel, she was happy to engage in biology topics and coursework that had relevance and connection to wider societal issues, despite what seemed to be an increased workload. Kristie furthered Rachel’s experience, suggesting that what they were learning had an impact on others:

Working harder at this school is not just doing something to get a grade. It’s doing something so you can learn and help, and you can apply it to so many different circumstances in your life. As Rachel said, we’re taking in social problems. With a project that we’re doing in biology, we are literally working with a current problem in the southeastern United States, and we’re trying to help fix it. That’s one of my favorite things about our school is that we’re not just learning to learn. And the teachers aren’t just teaching to teach and to have a job. They’re teaching because they want to help people ... and our job as students is to help others too.

Embedded in Rachel and Kristie’s back-and-forth sharing is that at CNS, and, in particular, in their biology class, they valued engaging with local and global events because they felt like they had the power to make a positive difference.

We saw examples of this perceived relevancy and agency for students in our observations as well. During one observation, students addressed the invasive nature of Lionfish in the southeastern USA and their effect on the ecosystem. To help alleviate the growing population of Lionfish, Miss Smith sought out students’ advice on how to address the problem. In response, the students collectively proposed Lionfish as a food source and began working towards the creation of a Lionfish meal that local restaurants could adopt (Fig. 2) which would help them achieve their goal of decreasing the Lionfish population. As Rachel told us, the goal of their PBLs was to bring attention to a “problem within society and figure out how you can help solve it.” In this sense, students were positioned as design thinkers, as they engaged with a highly relevant and local problem they could address in their own way.

**A New Sense of Empowerment**

In this section, we discuss how students perceived project-based learning as increasing their self-efficacy and how, in
the students’ opinion, the projects they completed empowered them to become leaders in their classroom and community. We structure this section by first sharing how this theme emerged through our data analysis. Next, we discuss how the nature of the students’ projects shifted their roles in the classroom.

“I’m a leader!”

While undertaking projects, students’ positive learning experiences influenced their positive perceptions of PBL, empowering them to take on new roles in their work. During conversations with students, they shared their understanding of the design elements of project-based learning and how they perceived the projects they engaged with affecting their identity as a learner. For example, Rachel suggested that PBL encouraged experimentation of social roles and norms, remarking that PBL requires exploration of a:

Problem within society and you [the learner] have to go figure out how to solve it. So, that has been great for me because I use to be in my own little bubble, and I was very limited, I wasn’t as social ... And it’s like, I’ve learned so much about who I am -- I mean my leadership skills have actually come to shine. I’m good with public speaking, I’m good with taking on a role if somebody’s not here. I’ve found kinda who I am in a sense, and I’m a leader!

In Rachel’s revelation, she proposes that the authentic components of PBL and the designed learning experiences she engaged in provided a pathway for her to experiment and make her more confident in her ability to lead class activities and groups. In turn, these projects encouraged Rachel to get out of her “bubble” and collaborate with classmates which led to an increase in confidence and willingness to take on leadership roles. In this sense, Rachel understood her learning as having a social-emotional benefit. When we pushed this conversation further to ask about the impact PBL had on the students’ identity and willingness to lead, our focus group respondents all signaled that they are confident to take on any role with their projects. In turn, the shifting of students’ increased responsibility required them to take more active roles in their learning.

In a similar vein, Kristie suggested that PBL has affected how she viewed herself as a learner. Kristie specifically alluded to how participating in a PBL has forced her to come out of her comfort zone, stating “if I were at another school,
this interview right here would not even be a possibility.” Furthermore, Kristie attributes her feelings of empowerment to their PBL work:

This school is made for students, it’s made for kids. It [CNS] really pulls kids out of their shell – You get to apply yourself to things and use your brain and self in a way that you didn’t even know was possible … it [PBL] really helps you realize who you are and what your role is, and how you’re going to turn out. And that’s my favorite thing about this school because it helps you become a better person and helps you become the person you’re meant to be.

In our conversations with the students, their sense of empowerment emerged from their positive experiences of taking on various roles and responsibilities in the classroom.

Designing for Confidence

Both Rachel and Kristie’s responses are a clear passion for PBL and their school as a whole. They recognized the relevance of engaging in projects related to current societal issues and suggested that their engagement, paired with their projects, has led them to take on new identities. We argue that this identity shift, felt by Rachel and Kristie, is the result of the positive experiences they had in negotiating their roles as both students and leaders. As Rachel shared, a foundational requirement of PBL is engaging with community stakeholders and experts. As such, after teachers have modeled how to make these connections, the onus falls on the students moving forward.

Rachel remarked that the current PBL, where she was creating a food dish out of Lionfish, put her classmates in a position to “contact restaurants on our own … we’re writing scripts for ourselves [for phone calls], we’re writing proposals!” Lane also perceived a positive shift in her leadership abilities as she reflected on her experiences:

I was one of those people that didn’t talk to people they didn’t know. When I came here – I’ve talked to so many news people – You walk into school and class and they [teachers] are like ‘Oh Lane go talk to them [about the project]! And I’m just like okay! Like you’re just up for it now, you’re ready for it!’

During our classroom observations, we witnessed students’ leadership and willingness to take on leadership positions as they assumed the roles of conservation geneticists to “create a detailed plan utilizing applied research, such as cloning, genetic engineering, and selective breeding” to restore the biodiversity of the diminishing populations of a select few species. During this unit, we observed a class “workshop” where students practiced their presentations and provided feedback to each project group to help them finalize their presentation for their community partner presentation (Fig. 3). The workshop was structured to ensure presenters were succinct and on point, while also allowing observers to provide formative feedback on a group’s presentation by using the prompts “I like….” and “I wonder….” (Fig. 4). As new observers came to listen to each presentation, the presenter gathered valuable feedback related to what they did well in their presentation and what aspects needed more attention.

Of particular interest to us during this workshop was that it was managed without a teacher in the physical classroom. On the day of the workshop, Miss Smith was ill and facilitated the workshop virtually from her home. During this time, students decided which group members would present and which members would circulate the room to listen to the other groups’ presentations to offer feedback. The workshop showcased a collective willingness to take on added responsibility and contribute to the success of each project. As a substitute teacher kept time, we watched the presenters try to fit their presentation into the 3 min; students ask questions for 1 min and then offer formative feedback. Unlike what

Fig. 3 Students practicing their presentations
might occur in a non-PBL classroom, students took ownership of their learning, navigated the classroom practices with no more than a prompt to keep them running on schedule, and offered feedback to their peers in real-time. This workshop was remarkable and an experience that our focus group students articulated made them feel like leaders.

**PBL and Relationships**

In this final section, we discuss the third theme, namely how students recognized and articulated the relational nature of their learning. Similar to our previous findings, we begin this section by sharing our focus group’s perceptions of collaboration. Then, framing our observations through the lens of the students’ perceptions, we discuss design features that promoted students’ positive perceptions.

*“It’s Like We Are One Big Family”*

During our observations and focus group interview, it was apparent that the student body was a close-knit group. The students often joked around with each other and had a good time collaborating but at the same time were deeply concerned about their peers’ learning as revealed in the previous section. That connection, among students as well as teachers and community members, was felt strongly among the students we talked with. While elaborating on how PBL challenged their ideas about school and what school should be like, Rachel expressed that “we all know each other. It’s like we are one big family in a sense … that’s awesome to have that connection!” School for these students was more than a building where they attended classes; school was a place where they could collaboratively express their ideas and interests.

Students were excited to work with each other and they expressed the value of collaboration and how working with other students and teachers helped them to develop better understandings of the topics they were exploring (Krajcik & Blumenfeld, 2006). Even more, when granted opportunities to work with other project groups, such as that in the workshop we observed, students did not just go through the motions of listening, offering feedback, and then reflecting. Rather, they were deeply engaged because they wanted their peers’ projects to succeed. The students recognized that the problems they were addressing were authentic and had real-life consequences, and as such, they, as a collective, wanted to develop meaningful solutions.

**Designing for Relationships**

The relationships that students developed were not just with their classmates. Indeed, while working on PBL projects, Lane mentioned that she was frequently granted opportunities to work with younger students across the school. Lane described how she worked with Kindergarteners, and how that collaboration had her “bond relationships with these kids.”

Lane also described how these relationships extended beyond school, recalling a project where she and her peers interviewed local residents at a nursing home and retirement facility and then wrote an essay about them. At the exhibition night, when students from the school presented their essays in front of other students and their families, community members, and local partners, Lane was able to share her essay. As Lane described the process of reading her essay in front of the school and her interviewee, it was clear this was a transformative experience for her:

My favorite part of that was getting – I was one of the people that got to stand up and read it [the essay] in front of everybody. But my favorite part was when I said her name, like the way she looked at me and
smiled, it was the best feeling in the world. She was so happy!

During our observations, we found the learning that was happening at CNS was much more than just content, it was deeply tied to the community. And, because it was authentic and community-driven, students’ learning came with the opportunity to develop meaningful relationships with each other, and with the individuals that engage with the same problems every day. Students recognized the value of these learning experiences and perceived them as meaningful experiences for their learning and interest in PBL.

**Summary of Findings**

The themes we highlight in this article reveal students’ perceptions of their project-based learning at Community Neighborhood School. As discussed in our findings, we recognize that the students’ learning went far beyond academic success indicators. As these ninth-grade biology students engaged with local issues, they felt that their creativity and ideas were appreciated, they were empowered to develop potential solutions, and they had the opportunity to develop meaningful relationships with stakeholders. We chalk these themes up to the thoughtfully developed design processes (e.g., establishing community partnerships) that guide PBL as a practice and the projects that were developed in Miss Smith’s class.

Significantly, “design activities,” such as those promoted by project-based learning, encourage students to be active constructors of their learning instead of just passive consumers (Hmelo et al., 2000). Our findings share this revelation and showcase how the PBL units we observed provided opportunities for students to engage as design thinkers, where they, collectively with their teachers, sought to fully understand local problems (e.g., invasive nature of Lionfish), brainstorm action plans (e.g., market Lionfish as a meal), prototype their designs (e.g., create Lionfish meal options), and share the solution with stakeholders (local chefs and restaurants). We argue that the real benefit of project-based learning, both academically and non-academically, comes when students lead with the support of teachers, and formatively design their learning.

**Discussion and Implications**

We caution the extent to which the findings of this research can be generalized, especially given the small sample size. However, in-service and pre-service educators, as well as educational leaders interested in adopting PBL methods, may find the implications of this study valuable. Overwhelmingly, scholarship on PBL promotes academic and non-academic gains. Additionally, the literature exploring students’ perceptions of PBL notes how students can articulate the value of engaging in this form of pedagogy (Virtue & Hinnant-Crawford, 2019) and are capable of providing thoughtful feedback on their learning. In our study, students valued the opportunity to engage with individuals across their school and community while working to address local issues by taking on a multitude of roles. Even more, while working with others, students recognized learning as a relational endeavor and perceived increases in agency and confidence. At the same time, we are reminded that even though students can articulate the value of their learning, this does not mean their input will be incorporated into future projects (Grant, 2011). We did, however, notice that Miss Smith designed multiple opportunities for students to provide formative feedback on the types of projects they wanted to pursue as well as opportunities for students to formatively evaluate their peers’ progress with their projects (i.e., through workshops). As students perceived these learning experiences as meaningful, we wonder how PBL educators are broadly incorporating students’ project ideas and if students have the ability to formatively shape projects?

We advocate that the design of any project-based learning experience should be a formative endeavor that seeks out input from students throughout the process. As we worked with Miss Smith, she repeatedly mentioned the need to include her students’ voices and ideas more in the projects they worked on, paving the way for future research at CNS. In response, we suggest introducing multiple formal opportunities for students to provide input on the direction of their PBLs. For example, Miss Smith could have students research local environmental issues and decide as a collective what issues are relevant to their class and standards and are worth pursuing instead of proposing an issue for students. Additionally, Miss Smith found success in reflection opportunities at the end of projects that encouraged student feedback and allowed them to share their perspectives on the solutions they created. Although this feedback was collected at the end of a project, future research should investigate how feedback shaped subsequent projects. Furthermore, the general collection of student feedback provides additional opportunities for broader PBL-based research, including how students’ perspectives can be included in the design of PBLs? How does the inclusion of students’ voices affect the development of class projects? And, how does the collection and valuing of student feedback in the idea generation of PBLs affect their interest and engagement in relevant social issues? To this degree, our research with Miss Smith and CNS as a whole is also formative, as we continue to seek out ways to improve the learning experience for her students, and the school population in general.

Furthermore, it is important to mention that this research was conducted during the COVID-19 pandemic, and as a
result, we were limited in terms of data collection. As part of our overarching ethnographic project, the research team had originally planned to observe multiple teachers and classrooms at CNS during the same time we were observing Miss Smith’s classroom but the weight of the pandemic greatly affected the teachers’ willingness and ability to participate in our study.

Declarations

Conflict of Interest The authors declare no competing interests.

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