

Creating Equitable Connected Learning Experiences for Teachers, Students, and Parents

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Abstract: In this paper, we summarize a project that uses an online social learning environment (SLE) to address the persistent achievement gap in science. Our goals are to design responsive teacher professional development, create opportunities that amplify parent voices and family involvement, and support student identity. In our work, teachers have an innovative method of instruction and a new tool for cultivating home-school partnerships centered on academics. Students have a method of engaging in scientific practices that are relevant to their experiences, and parents have a new avenue for contributing to their child's science learning. Our overall research goal is to create connected learning experiences for teachers, students, and families. We present descriptive findings that show how our work is helping teachers to integrate science and culture. We also present ways that students and parents are being invited to share their personal and cultural identities in science classes.

Introduction and theoretical frameworks

Parent involvement research

Multiple studies indicate that parents from diverse cultural and ethnic backgrounds recognize the importance of education and are keen to participate in their students' education experiences. However, there are barriers to participation that parents from minority, immigrant, and low-socioeconomic status groups are likely to experience (Karibayeva & Boğar, 2014). For instance, parents from minority groups have expressed challenges related to transportation and scheduling issues. Language and communication are among the most frequently cited variables that influence the ways that immigrant families participate in school events and traditional parent involvement activities (Coll, et al., 2002; Turney & Kao 2009). Although multiple studies like those mentioned above describe the importance of parental involvement, there is still a need for studies of innovations and interventions to increase parental involvement.

Across all demographics, parents want to be involved in their children's academic experiences (Albrecht, 2015). This was confirmed in each of our focus group meetings. Immigrant parents also mentioned obstacles that prevent them from being as involved as they would like. They discussed challenges such as transportation issues, scheduling issues, and feelings of discomfort in the US school settings where they are unfamiliar with the norms and expectations. Technology-rich learning environments may offer more accessible avenues for parental involvement than traditional approaches. Lewin and Luckin (2010) report that interactive technologies that are readily accessible can support parent engagement, but that it must be supported by thoughtful practices that focus on parents' and students' needs. They suggest following participatory design practices to ensure the effectiveness of technology-enhanced interventions to support parent engagement and student learning. The social media learning environment we will enact is not intended to permanently replace in-person parental involvement, but we hypothesize that it can serve as a key pathway to initiate and sustain parent involvement and a way to connect science learning across students' broader contexts (Lewin & Luckin, 2010).

Creating equitable experiences

A persistent *achievement gap*, differences in assessment profiles between white and minoritized students exists amongst racialized communities. Immigrant families are included within such communities. While an achievement gap can be named, Gutiérrez (2008) challenges researchers to move the conversation from "*gap-gazing*" to a lens of perpetuating academic success. The present project seeks to bring the voices of these communities into classrooms through the use of an online social learning environment. This is not only a way to validate familial knowledge, it is a move toward creating equitable classroom environments, bolstering academic success, and narrowing the persistent achievement gap.

An interpretation of the discrepancy in achievement between white and marginalized students could be that many students navigate identity shifts in school. That is, many marginalized students are forced to

simultaneously live in two worlds; one in which their home culture exists and the other is mainstream culture. The system for schooling in the United States typically perpetuates mainstream culture which unintentionally further marginalizes the voices and experiences of immigrant and minority families. Using an SLE to bring these voices and perspectives into learning spaces is an innovative approach to connect the two worlds students already participate in.

Computer supported collaborative learning

In our work, we view the social learning environment as one that supports collaborative learning. We have known about the many affordances of technology in educational contexts for decades. Multiple reviews have summarized the many ways that it can support learners to engage in computer-supported collaborative learning (CSCL) (Dillenbourg, Jarvela, & Fischer, 2009). Simply defined, collaborative learning occurs when two or more learners work together to accomplish a particular learning goal. We use principles from CSCL research to inform our approach to technology integration. For example, during the professional development institute, we discuss how teachers can provide guidance for students and parents to engage in productive social interactions without over scripting their participation. Students and their parents collaborate to answer questions and complete activities in order to achieve particular learning goals. Our work responds to Jeong and Hmelo-Silver’s (2016) call to take into account social and cultural contexts and pedagogical strategies as we study the role that CSCL experiences.

Methodology

Research context

Our research took place in two middle schools with large Somali, Latinx, and Hmong student populations. Teachers participate in a one week professional development meeting to learn about the social learning environment, Flipgrid™ (Flipgrid.com). They also learn discuss approaches to create culturally responsive learning experiences that invite students and parents to make connections between their everyday lives and the science being covered in their classes. The meeting culminates with time for teachers to plan lessons that can build on the ideas that students and parents share in the SLE.

A typical chain of events in the SLE begins with the teacher designing and posting a video or text-based activity that requires a co-constructed response from student-parent pairs (for example, “*When was a time when you experienced extreme weather?*”). Student-parent pairs then co-construct a video response ranging in length from 90 seconds to 5 minutes in the language of their choice and view other student-parent responses. In class, the teacher leads a follow-up discussion based on responses. Families can respond in English or in their native languages. The SLE can be used to translate some languages. Our research team includes family liaisons who work in the partner schools and are available to translate responses. Additionally, teachers invite students to translate responses. Teachers typically assign two SLE prompts per month.

Participants

In year one, 10 teachers and 495 students in grades 5, 6, 7 and 8 participated in the project activities. In year two, 11 teachers and 351 student participated in the project activities. Note that the student participation numbers represent the number of students who received consent from a parent or guardian and also gave assent for us to use include their SLE responses in our research.

Table 1 presents student demographics from each school

Partner School	Hispanic/Latinx	American Indian	Asian	Black/African American	White	Free/Reduced Lunch
1	10.9%	.9%	60.2% (Hmong)	18.4%	5.1%	76.4%
2	4.9%	4.3%	1.2%	82.6% (Somali/East African)	5.1%	87.2%

Data Sources

In this paper we include descriptive examples taken from parent and student SLE responses. We also include a descriptive analysis of the prompts that teachers created within the SLE across two years of participating in the project.

Findings

SLE Responses

Initial analyses show that students are sharing their personal identities in ways that they are not in traditional classroom activities. For example, in response to a prompt asking about the rotation of the earth and seasons, one student created a video of herself explaining her answers using toys as props for the earth and sun and including her younger siblings to illustrate rotation. She recorded herself from multiple angles and had music playing in the background as she spoke. Her teacher discussed this video during a professional development meeting and shared that he was shocked to see her response because she does not typically talk in class. This student's response illustrates the ways that we are seeing students being able to share more of their personal identity (music, different camera angles, toy props) and their cultural context (sibling participation).

In other responses, parents and students describe the environments they grew up in, extreme weather events they experienced, oldest thing they own and most interesting rock formations they have seen. In their responses, they share information about family vacations, ancestors and cultural practices. The videos show students speaking alone, parents speaking alone and students and parents together. The responses are personally relevant and represent student's identities outside of the classroom. When teachers share the responses in during classroom discussions and activities they are validating students' cultural heritages and supporting their identities.

In response to a prompt asking where wind comes from, a student and mother begin by sharing their ideas. Then the mother calls her brother on her cell phone and asks him. He shares his ideas from television shows and documentaries he has seen. This is a fascinating example of the familial involvement that is inspired by the project activities. Multiple responses feature the student speaking in English and the parent speaking in Somali or Spanish. During the professional development workshops, teachers shared that they use these "dual language" responses as powerful opportunities to connect home and school contexts.

Parents are delighted to show their children that they have knowledge that is relevant to what they are learning in school and they appreciate being asked to participate in meaningful academic activities. Figure 1 presents a response from a Somali father illustrates the how meaningful the invitation to share his ideas with his student and their teacher is to him. An illustrative quote is included below.

Prompt - "What is a technology that affected your life?"
Parent Response (translated from Somali) - "Hello, peace and blessings be upon you! I'm contacting here with the teacher of ... I'm contacting to talk about technology. It's a newly discovered modern tool that we have now. It's a new world which includes: mobile phones, TVs, and telephones. Before, there was not telephones, it did not exist. Vehicles did not exist. The world was narrow. People could not go anywhere. People used to walk and it would take 2-3 nights to get to the nearest village. For example, in Africa, people can communicate now day and night. People talk to each other regularly and that was not possible before. It used to take years to reach places. Thanks to God! It's a modern world that we are in. It's a new world. I'm greeting you with this message! I don't read or write. Again, I'm greeting ...'s teacher. Peace be upon you!"

Figure 1. SLE Prompt and Parent Response.

Responses like these also show that parents feel that they are developing social capital within the school environment. This is especially important for immigrant families who new to the US and unfamiliar with the US education system and for domestic minority families who may have had negative experiences in the school system when they were students.

Teacher prompts

We categorized the teacher prompts to characterize whether their primary focus was on science or culture. A third type of prompt integrated science and culture. Science prompts are those that are primarily about scientific concepts and phenomena. There is no request for students to make connections to their interests, real world contexts, or everyday experiences. Culture focused prompts ask students to share ideas and experiences from their everyday lives. Integrated prompts are those that integrate scientific content and culturally relevant experiences. They ask students to make connections between their lived experiences and scientific concepts and phenomena. Table 1 lists data showing the numbers of each type of prompt teachers assigned in their first vs. second year of project participation.

Table 2. Prompt Types by Participation Year

Prompt Types	Year 1	Year 2
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	<i>N</i>	%	<i>N</i>	%
Science	28	62.22	27	42.86
Culture	8	17.78	9	14.29
Integrated	9	20.00	27	42.86
Total	45		63	

The most compelling change to note is the increase in the number of integrated prompts teachers assigned in year 2. Informal discussions and focus group responses indicate that during their first year of using the SLE, teachers focused on learning how to use the technology and planning for ways to incorporate it into their pedagogy. In their second year, more of their focus was on creating prompts that would elicit ideas about science while making connections to their identities and cultures.

Discussion

This information makes a critical contribution to our understanding of ways to create equitable education experiences. Our work makes a unique contribution by designing intervention experiences that focus on increasing parent involvement and supporting student identity and examining the ways that those interventions impact teachers, students, and parents. Teachers, students, and parents are creating a dynamic online community. The community provides connected learning experiences by allowing middle school students to unite their personal interests and cultural knowledge with their academic science learning experiences. (Ito, et al., 2012). Findings show that parents and students are responding positively from teachers' efforts to create culturally responsive learning experience. We believe that the positive experiences are due to their engagement in experiences that broaden what counts as science and because their families are able to participate in their learning in meaningful ways. Ongoing analyses are examining the discourse students and families engage in during their SLE responses. We are also analyzing classroom observations to further understand ways that teachers are using the SLE responses in their classes.

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