

ENGAGING WITH ANTI-DEFICIT TEACHING THROUGH A STUDENT INTERVIEW: AN ADAPTATION OF THE FUNDS OF KNOWLEDGE PROJECT

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We discuss a professional development activity that engaged university mathematics instructors with anti-deficit teaching with minoritized students in the US. Our year-long program focuses on anti-deficit teaching and inquiry-based learning in mathematics at the university level. One important component of the program is an instructor-led interview with one of the instructor's students. This activity is inspired by Funds of Knowledge work wherein primary and secondary mathematics teachers conduct home visits to learn about resources from the students' lives and their families. Using data from two cohorts of participants we argue that the instructor-led interview within our project similarly humanized students, challenged deficit narratives about them, while also revealing their personal and community resources. Instructors learned about minoritized students' experiences in higher education in the US. These individual stories also become great fodder for instructors' group discussions and reflections about inequities and nuances in the experiences of minoritized students. We conclude with a methodological discussion about the interview as a professional development activity.

INTRODUCTION

Despite the increasing attention and focus on understanding and addressing educational inequity, deficit discourses about minoritized students continue to persist in mathematics classroom and in mathematics education research, from early childhood to the university level (Adiredja & Louie, 2020). We focus on students from underrepresented and underserved backgrounds in higher education in the US as minoritized students. This group includes ethnic minorities, women, students from low socio-economic students, and those who are the first in their family to attend university.

While the sociopolitical turn in mathematics education was noted within the last decade (Gutiérrez, 2013), different studies and projects have long identified deficit discourses about minoritized students as a target of change. One notable effort is the work of the Funds of Knowledge for Teaching project (FoK; González et al., 2005). One goal of the project was to disrupt deficit narratives about students and their families related to schooling, by recognizing knowledge and skills from the students' lives and their communities. Central to the original FoK project were ethnographic home visits by teachers with students' families followed by working group discussions. These activities challenge deficit preconceptions about students and their families and provided resources for teaching (Tenery, 2005).

We adapt these ideas from the FoK project in our professional development (PD) program for university instructors. Instructors visit the campus cultural resource centers (e.g., the African American student center) and engage in conversations about race and gender with students from the center. The instructor also invites one of their students for an individual interview about their experience as a minoritized student. In this report, we investigate the impacts of the instructor-led interview has on instructors and their teaching. While other studies have used excerpts from interview with students to

talk with teachers about educational inequities (e.g., Leyva et al, 2021), here we emphasize the potential benefit of instructors interviewing students about their lives and learning experiences and then sharing their experience and the stories they heard in a faculty learning community (FLC).

THEORETICAL FRAMEWORK

The current study frames the persistence of deficit discourses in mathematics education and efforts to disrupt them from a *socio-ecological perspective* (Louie & Zhan, 2022). Deficit discourse in mathematics education is defined as social norms and narratives that focus on responding to students' academic and intellectual shortcomings, with minimal recognition of students' existing resources. Deficit discourse interprets and attributes such shortcomings to students' character and backgrounds (academic, cultural, families), largely ignoring broader social and historical contexts.

The socio-ecological perspective recognizes that such discourse is not only a bias of an individual. Instead, it operates and is reified at the individual classroom level, at the local community level (e.g., a mathematics department), and at the societal level (Adiredja & Louie, 2020). Moreover, deficit discourses across the three levels communicate and inform one another. Thus, challenging deficit discourses must be a concerted effort of the individual and their broader communities.

METHODS

The data comes from a PD project that engages university instructors in a community learning project that focuses on race, gender, and mathematics. The goal is to support instructors and students develop an anti-deficit approach to teaching and learning. Main components of the year-long program are: 1) five PD meetings to introduce instructors to inquiry-based learning teaching methods and challenging deficit discourse; 2) implementing such approaches in a five-day mathematics workshop (held in August right before the start of the academic semester), which serves minoritized students who are enrolled in a pre-calculus, calculus, or linear algebra the following semester; 3) participating in five conversations with students about their science, technology, engineering, and mathematics (STEM) aspirations, resources, and potential barriers, as well as the role of race, gender, and mathematics in their pursuit of their studies; 4) participating in FLC meetings; and 5) conducting an individual interview with one of their students from the workshop.

We share data from 2 cohorts of instructors (6 instructors per cohort). Six of the instructors were doctoral students in mathematics (pseudonyms: Cedric, Emory, Maddie, Patrick, Sean, Sutton), one was a post-doctoral scholar (Makayla), and five (Edna, Hannah, Jorge, Savannah, Zaynah) were part of the teaching faculty in the department. Five participants identified as men and 7 as women. Races of the participants included one Asian American, one Mexican American, and the rest are white. We focus our analysis on data from the post-interview group reflection during an FLC meeting. We also drew from two additional data sources to triangulate our findings: 1) data from the instructor-led interviews with students, 2) the post-summer workshop survey that asks instructor to share their noticing about their students in the workshop, which can include comments about individual students.

We introduced instructor participants to the interview protocol (6 questions) and one way to conduct an interview. The instructor told their student that the goal of the interview was “to learn more about you, how you got to be a STEM major, and how you experienced your STEM classes.” A sample

question from the protocol is: “How would you describe your relationship and interactions with your STEM professors and classmates?” On average the interview lasted around thirty minutes. Participants chose which student they interviewed. Four of the 6 instructors (in cohort 1) and all instructors in cohort 2 attended the FLC meeting to share their interviewing experience.

RESULTS

Expectedly, **most participants got to know their students more personally.** However, the stories instructors heard from students also helped some instructors **shift deficit narratives about their students.** For example, Edna learned that her student had “very heavy family ties,” noting that, “he ha[d] this life that he brought [to the university] that [was] so strong.” She noted that she was just “so impressed by his maturity,” something that she did not observe during the workshop. Zaynah also had a noticeable shift in her view of her student. During the interview, Zaynah quickly learned about her student’s passion in and commitment to studying forensic science. In the case of Zaynah, the way she described her student during the FLC contrasted with how she described her in the post-workshop survey. The student was “just kind of there” in class and would “sit back and wait for others” to do the work.

Most participants heard stories about racialized and/or gendered experiences from their students. Some of these stories were experiences of discrimination and microaggressions. Others were about more nuanced issues like students’ reactions to being a representative for their race and gender because they were the only student with their background in their class. For example, Maddie learned that her student, who identified as a woman and an ethnic minority, was regularly dismissed and ignored by a male student during groupwork in the student’s calculus class. Sutton listened to his student’s struggle with being one of the very few women in her STEM classes, which she said would either position her as inferior or intimidating to her classmates. Cedric’s student, who identified as a Black woman, brought up similar issues of underrepresentation of her backgrounds in her classes.

Instructors compared and contrasted stories they heard from their students during the FLC, and it generated powerful discussions among them. For example, Sutton and Cedric discussed the difference in responses from their students about being a “representative” of their race and gender. Cedric’s student took it as a point of pride to be a successful underrepresented student. Sutton’s student saw it more negatively, as she felt the pressure to not fail. This conversation led to a caution against assuming that one student’s response to an issue would generalize to others with similar background.

Instructors also reflected on their practices after hearing different student stories during the FLC. For example, for Makayla, the interview experience showed her that she could get to know her students more deeply during the regular semester. Savannah learned that her student dropped her calculus class after witnessing a male student being laughed at for not remembering a trigonometry formula. These stories generated discussions among the participants about how to respond to similar incidences. The story that Maddie shared from earlier about her student being dismissed by a male student led to discussions about group power dynamics, and the pros and cons of changing groups in class. Participants shared their wisdom and approaches to similar situations with one another.

CONCLUSIONS

We argue that instructor-led interviews with a student, as a PD activity, supports university instructors' engagement with anti-deficit and humanizing practices in mathematics teaching. The interview and the associated discussions helped some instructors to shift deficit narratives about their students. They also exposed instructors to the complexity and nuances of racialized and gendered experience that students had. Instructors, just like the ones in the FoK study, formed a learning community and grew from listening to one another's' experiences during the interview. The instructors were able to learn more about their students, their resourcefulness, and aspirations. We also argue that listening to diverse stories about similar topics, experiences, and interpretations further humanize minoritized students.

The interview cannot be treated as an isolated activity. The post-interview FLC was a critical part of the learning process for instructors. Other aspects of the PD, like the explicit discussions about anti-deficit teaching to the visit to the university cultural centers, they all contributed to the community from which instructors learn and within which they build relationships with students. The community involvement also helped prevent the essentialization of minoritized students and their lived experiences. Interviewing a student and discussing race and gender are challenging. However, we found that even for those with minimal experience interviewing, they were still able to gain valuable insights into their students' experiences. More importantly, the stories they heard became great resources for discussions around issues of race, gender, and their role in teaching and learning.

Additional information

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