

Self-reported Student Motivations to Participate in DEI Service Work

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Keywords: Department change, introductory math, student voice, equity

The proposed poster describes information collected from a case study of a DEI initiative in the math department at Kappa University (KU). In Spring 2023, a Networked Improvement Community (NIC) of faculty members and administrators began meeting monthly to discuss DEI in introductory math at KU. After one semester, in recognition of the need to better attend to Gutiérrez' critical axis of equity (2002), the NIC leaders solicited applications from undergraduate and graduate students. Applicants were asked "Why are you interested in joining the KU Networked Improvement Community (NIC)?" We use the 117 application responses as data to answer the question: *What motivates students at KU to get involved in DEI work in the mathematics department? How do students bring their identities into these motivations?* We conceptualize students' desired engagement in the NIC as involving "joint action for a common good," within the "voluntary organizational activity" of NIC participation (Ansala et al., 2016, p. 151). Ansala and colleagues detail five emergent themes which motivated students' engagement with activism: *social* motives of engaging collaboratively, motives of *influence* related to a desire to have a positive impact, motives emphasizing the *benefits* of engaging in activism, motives related to activism as a *lifestyle*, and motives of pure *coincidence*. We utilized the former four themes as first-level *a priori* codes. We also found a need to attend to student identities, framed with a critical sociocultural lens (Esmonde et al., 2009), which articulates both *social identities* and *practice-based* components of a person's identity. The social components are the socially constructed aspects of one's identity, that are both imposed on people by society and that we impose on ourselves. The practice-based identities are developed through our participation in cultural practices. This perspective on identity encourages attention to how social identities interact with and inform practice-based identities. Here, we explore how students evoke their identities in their expressions on wanting to join the DEI work in the mathematics department.

Our preliminary analysis shows that of the 117 applicants, 50 referenced a component of their social identity as salient to their application. The social identities they cite include race, gender, sexual orientation, being a first generation student, being an international student, being low income or rural, and disparate access to calculus before college. Among these students, 27 also reference either having previous positive experience with math, a very strong math identity, or referenced mathematical struggles. Additionally, 104 out of 117 cited a desire to have influence as a component of their motivation for their participation in the NIC, often in the context of making the mathematics program or its associated classes a more positive experience for other students. This often included reference to their own identities; a student remarked, "*as a Latina woman, I usually find myself pretty isolated in the fields of STEM...I would love to be a part of transforming the world of mathematics, especially at KU, into one that is accepting and transformative for people like me.*" In the poster, we highlight student voices behind the motivations and patterns of how students motivate their participation in an equity-oriented NIC.

References

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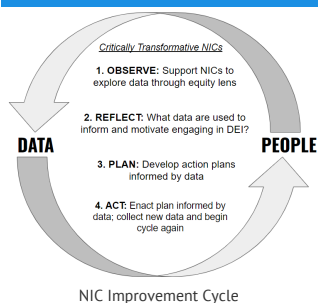
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Background

Existing structures in college math departments that don't attend to students' varied identities may compound feelings of exclusion in introductory courses [5]. Thus, there is a need to interrogate and challenge the systems currently in place, particularly at the level of college calculus. Students, as experts in their own experience, play an important role in such DEI initiatives. As D'Ignazio and Klien assert in Data Feminism, leveraging experience and emotion as sources of data has the potential to inspire systemic change [2].

Kappa Networked Improvement Community (NIC)



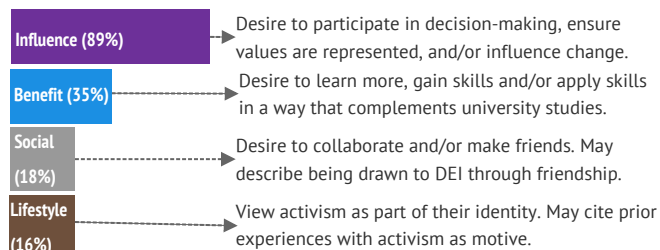
In 2022, a team of faculty members at Kappa University (Kappa), as part of a multi-institution collaboration, began work toward critically transforming their introductory math courses. They assembled a "Networked Improvement Community" (NIC) of faculty, staff, and administrators who met monthly to discuss potential changes in the Calculus sequence at Kappa. After one semester of work, NIC leaders recognized the need to

better attend to Gutiérrez' critical axis of equity [4] in understanding and addressing student experiences in Calculus at Kappa and the intersection of these experiences with student identities and backgrounds. Thus, it became essential to not just gather data on student experiences but to incorporate students into the NIC itself. In Summer 2023, the NIC leaders solicited applications from graduate and undergraduate students to join the NIC. As a case study, we analyze responses to the single application question, "Why are you interested in joining the Kappa NIC?"

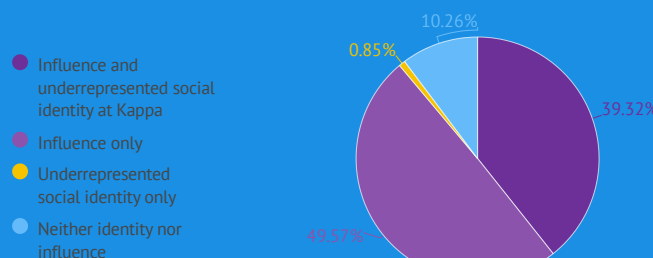
Research Question 1: Motivations

What motivates Kappa students to get involved in math department DEI work?

We conceptualize students' desired engagement in the NIC as involving "joint action for a common good," within the "voluntary organizational activity" of NIC participation [1], and thereby used Ansala et al.'s four themes as *a priori* codes:



Students cite desire for influence and social identities as motivations to join DEI-focused intro math Networked Improvement Community.



Self-reported applicant motivations, n=117



Student Voices

Influence Social identity

As a Latina woman, I usually find myself pretty isolated in the fields of STEM, rarely coming across professors or other students who look like me. I would love to be a part of transforming the world of mathematics, especially at [Kappa], into one that is accepting and transformative for people like me.

Benefit

I am interested because it seems like a good opportunity to help [with] on going research at [Kappa]. I want to get better at interviews which will be beneficial to me.

Social Motivation

What excites me most is the chance to collaborate with a diverse group including faculty, instructors, and fellow students. I am enthusiastic about participating in data collection, analysis, and collaborative efforts within the [Kappa] NIC that accommodate different learning styles and backgrounds.

Lifestyle

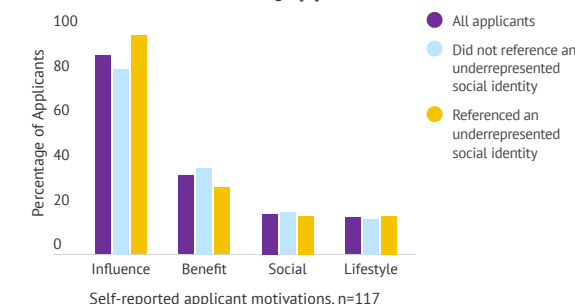
As a lifelong activist, I have always fought for change and equity as much as is possible in the environments I inhabit. Nowhere is this more relevant than in the courses that I take, where I do not see the diversity of students that I would expect to find at a diverse institution. I want to join the NIC so that I can help make math courses, nationwide, a more welcoming place for all, so that all students are comfortable in the math classroom and all can forget about its looks to focus instead on expanding our knowledge in the field.

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Research Question 2: Intersection with identity

How do Kappa students bring their identities into these motivations?

47 of the 117 applicants referenced a component of their social identity [3] that is underrepresented in math at Kappa as salient to their application. Underrepresented identities that were referenced by students related to race (13.7%), gender (8.5%), sexual orientation (3.4%), high school math preparation (4.3%) being a low income or rural student (11.1%), being a first generation student (6%), and being an international student (6%). **Students who referenced an underrepresented identity were significantly more likely than those who did not also express a desire for influence as a component of their motivation for participation.** This was often in the context of making mathematics courses at Kappa a more positive experience for other students, resonating with Gutiérrez' critical axis of equity and a desire for structural change [4].



Acknowledgements

This research was partially funded by the National Science Foundation ECR-EDU Core Research grant #2201486, Achieving Critical Transformations in Undergraduate Programs in Mathematics (ACT UP Math).

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