

“More and New Insight”: Undergraduate Mathematics Stakeholders See, Imagine, and Evaluate
Selves through Collective Poems on Inclusive Teaching

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The use of inclusive teaching practices is novel for many instructors; there is a need to support instructors in envisioning what it looks like to teach inclusively. Related to this learning is a focus on reflection—on one’s current self as an instructor and envisioning whom one could become as an inclusive teacher. This study explores reflections made possible by reading and responding to collective transcription poetry. Informed by Gutiérrez’s conceptualization of equitable teaching as existing across critical and dominant axes, we took undergraduate mathematics program stakeholders’ definitions of inclusive teaching practice and created collective transcription poems. We presented the poems to stakeholders, who then reflected on them. We highlight reflections indicative of stakeholders’ current selves and possible selves, and the emergent theme of evaluative selves as ways in which to bridge these two dimensions of self with regard to inclusive teaching. We conclude by sharing directions for future work.

Keywords: inclusive teaching practices, critical methodology, reflections, possible selves, networked improvement community

Nationally, undergraduate mathematics courses have significant room for improvement when it comes to equitable and inclusive teaching and learning (e.g., Theobald et al., 2020). The work of moving toward more diverse, equitable, and inclusive undergraduate mathematics teaching and learning is not easy, nor can it be accomplished via a checklist type of approach. Rather, the work is complex and messy and involves people in professional relationships with one another, forming communities, and making sense of their current practices and how those could change for the better. Those involved in instruction in undergraduate environments bring their own identities into the classroom context (Ceglie & Settlage, 2019); identities can evolve as a person considers whom they are currently (current selves) and explores whom they might become (possible selves) (Gee, 2001; Markus & Nurius, 1986). We seek to understand the nature of these considerations with regard to inclusive teaching practices and values.

This study is part of a larger project studying how to support mathematics departments to positively impact diversity, equity, and inclusion. Each department formed a networked improvement community (NIC; Martin et al., 2020) of six to 11 members who met regularly to consider department data and make plans for action. The project brings a critical lens to this equity-focused work. Thus, we chose critical research methodologies that centered the voices of participants and engaged collaboratively with the participants to elicit their feedback and reactions to our research analyses. Here, we explore how NIC members engaged with poetry based on their definitions of inclusive teaching.

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Literature Review

We use Gutiérrez's work (2002; 2009; 2012) to conceptualize equity in undergraduate mathematics classrooms. Gutiérrez bifurcates issues of equity along the dominant axis and the critical axis. The dominant axis emphasizes the *access* students have to resources that allow them to participate in mathematics and how this access influences their *achievement*. This axis characterizes an approach to improving equity that focuses on helping students navigate and succeed in existing systems. In contrast, approaches aligned with the critical axis challenge these existing systems. The critical axis foregrounds student *identity* and *power* in mathematics, aiming to transform the system to better serve students, particularly those from marginalized communities. Both axes are necessary for equity-oriented reform, although the dominant axis is often highlighted in change efforts and is more commonly drawn upon by undergraduate mathematics stakeholders to justify enhancing diversity in STEM (Tremaine et al., 2021).

Inclusive teaching incorporates instructor mindset and practices along with the establishment of a classroom community in which students are attuned to hearing the voices of peers. Inclusive classrooms involve ongoing dialogue between instructors and students to develop and nurture a climate in which all participants have a voice, feel their voice is heard, and in which connections between content and students' lived experiences are explicit (Dewsbury & Brame, 2019; Freire, 1970; Nieminen & Pesonen, 2022; Saunders & Kardia, 1997).

Instructors may face barriers to implementing inclusive or equity-focused instructional practices, including their epistemological beliefs about mathematics, hesitance to engage in conversations about student identity, and prior schooling experiences (Dewsbury & Brame, 2019; Shultz et al., 2023). Many current instructors did not experience learning in inclusive classrooms and so may struggle to envision and implement inclusive teaching practices (e.g., Dewsbury & Brame, 2019). However, instructor growth to learn about and effectively adopt inclusive teaching practices is quite possible, given appropriate learning opportunities and support, such as faculty learning communities (Corrales et al., 2021) and departmental action teams (Corbo et al., 2015). A key to instructor growth is for instructors to not just hear about inclusive practices, but to actively engage in reflections on their teaching practices as part of intentional improvement efforts (Dewsbury & Brame, 2019; Schön, 1987).

Conceptual Framing: Possible Selves

Possible selves (Markus & Nurius, 1986) has been used as a conceptual framework to describe identity exploration, evaluation, and development (e.g., Dunkel, 2000), including professional identity in education (e.g., Blaney et al., 2022; Park & Schallert, 2020; Quaisley et al., 2023). We draw from possible selves to describe how instructors engaged with the poetry on an individual level. As individuals think about their potential future they draw from a collection of possible selves—who they might become—to guide their behavior. Possible selves are specific to an individual, representing a “cognitive manifestation of enduring goals, aspirations, motives, fears, and threats” (Markus & Nurius, 1986, p. 954) and emerge from whom one was. Possible selves are also influenced by the sociocultural and historical contexts in which the individual resides. Possible selves are a source of motivation for individuals, functioning as “incentives for future behavior,” as individuals endeavor to align themselves with possible selves they consider ideal, or to reject behaviors they connect with possible selves to avoid (Markus & Nurius, 1986, p. 955). In this way, individuals engage in reflection, evaluation, and interpretation of the alignment between possible selves and their current self to analyze how the current self measures up to whom they want to become, could become, or fear becoming. Among the collection of possible selves is an ideal self—the self whom one strives to be. Related to our

work, instructors may engage with the poems to evaluate or interpret how their current self aligns with the various possible selves they can be as a teacher, specifically related to an ideal self who uses meaningful inclusive teaching practices.

Using possible selves as a conceptual framing, we aim to better understand the ways in which undergraduate mathematics program stakeholders engage with identities that embody or experiment with inclusive teaching practices and values. We investigate the following research question: *In what ways do stakeholders reflect on current and possible selves in the context of inclusive mathematics teaching through engagement with collective poetry?*

Methods

The work of the NICs began in January 2022, and the larger project is collecting a wide array of data from the NICs. We began with the initial reflective journals from members of the Tau University NIC (TU-NIC) and Kappa University NIC (KU-NIC) (all names are pseudonyms). Among other journal prompts, we asked “*Describe what you think it means to teach with inclusive teaching practices.*” Participants consisted of mathematics instructors (including professors of practice and tenure-track faculty members) and administrators. They were given the option to submit their journals anonymously. We extracted the responses to that prompt from all 16 of the journals and coded them using Gutiérrez’s (2002; 2009) dimensions of achievement, access, identity, and power. We then engaged in poetic transcription (Authors, 2022; Clarke, 2017; Prendergast, 2009) to capture the four dimensions. We constructed transcription poetry from the full set of excerpts for each NIC without stratification by participant; in this way, each poem contained excerpts from the words of multiple participants in each NIC. This method of *collective* poetic transcription enables maintenance of participant anonymity (e.g., Thunig & Jones, 2020). For TU-NIC, three researchers each wrote individual poems, and then met and created a set of poems. For KU-NIC, one researcher wrote all of the poems.

The collective poems for each institution were then shared with their respective NICs. We captured written feedback via individual Jamboards² containing the poems (two from KU-NIC; nine from TU-NIC) and field notes that captured verbal responses to the TU-NIC poems during a regularly scheduled TU-NIC meeting. Notably, participants responded in other ways; Figure 1 provides an example of an artistic response via drawing. Whereas the opportunities for multimodality of response was an intended strength of using the Jamboards to collect reflection data, we are still learning how to analyze non-textual and non-verbal responses and thus have excluded such arts-based modes of reflection from this particular analysis. We approached our analysis thematically, and used open coding on the written Jamboard reactions. We then met and discussed the codes that arose from each NIC’s reactions, collectively combined related codes, and came to agreement.

The initial open codes included general reflections, connections to individual and collective practices (current or desired), challenges, posing questions, emotive responses, and responses to poetry as a form. After open coding, we engaged in axial coding, during which we saw connections in the data to possible selves (Markus & Nurius, 1986). Many of the NIC members responded to the poems in personal ways that compared the poems’ collective NIC responses to their own values and teaching. Upon making this connection to possible selves, we revisited the

² Scholars have used Google Jamboard as a tool for brainstorming and fostering discussion in participatory research projects (e.g. Huynh et al., 2022). This study extends such use by engaging Jamboard as a data collection tool focused on NIC members’ perspectives. Benefits of Jamboard include its multimodality of engagement and customizable environment.

data and coded it using current selves and possible selves as primary codes and identified evaluative selves as an emergent code that added nuance to our understanding of how stakeholders conceptualized themselves with respect to inclusive teaching.

Poem 2

It is extremely important to think about policies, systematic differences in outcomes, the results of our assessments. Creating a space where everyone can thrive in the curriculum, and pedagogical approaches, and assessment. Everyone with different incoming backgrounds should feel like they can be successful in the class. Varied methods of assessing learning—I want to provide enough flexibility in assignments that all students will have an opportunity to demonstrate their growth if they are willing to put in the effort.

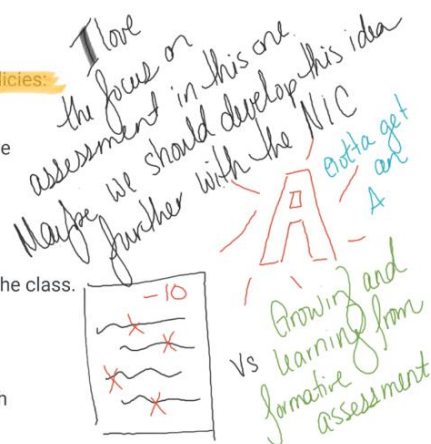


Figure 1. Screenshot of Jamboard response from a NIC participant.

Findings

NIC members engaged in reflections about current and possible selves through their interaction with the poems via the Jamboard platform. We identified three primary shapes taken by the NIC members' reflections—that of the current self, that of the possible self, or that which uses the possible self to evaluate the current self. Below, we detail these shapes, recognizing that all selves are fluid and thus that these reflections represent the specific selves relevant to each participant at the moment in time in which this activity took place (Markus & Nurius, 1986).

Reflections on a Current Self

Reflections on a current self are those in which the individual engaged with the poetry in a way that expressed an awareness of practices that they currently enact in their role as a mathematics instructor or administrator, or asserted a value that they presently hold related to teaching inclusively. Because these poems were constructed through the process of poetic transcription, seeing their colleagues' and their own words about what inclusive teaching can entail prompted moments of resonance or reflection, either with a value or a concrete action, that they currently incorporate into their professional practice. We detail some instances of these reflections below.

Many instances of reflections on current selves were provided in the form of value statements (Seah, 2002), in which an individual connected with the poetry by affirming a value about mathematics education which they read (either explicitly or implicitly) from the poem, or expanding upon the content of the poetry to profess a value which they presently hold in relation to inclusive teaching. For example, in response to the KU poem on Access, Tiersa wrote, "I think it's important to set clear policies, but I want those clear policies to be flexible policies." The poem led them to identify a component of inclusivity that they value: clear policies that maintain a degree of flexibility. In a particularly notable quotation, Connor reflected on the TU Achievement poem by writing that the poem's frequent mention of grading was a "damning perspective," as "learning is more important than grading." This reflection conveys a relativistic value presently held by Connor. In response to the lines, *It is extremely important to think about*

policies: // systematic differences in outcomes, Skylar agreed and elaborated that this value is “why we have decided to have administrators as part of our NIC membership, because we wanted to examine and change this systemically.” In this way, Skylar not only identified a value held by their current self, but connected that current value to a decision.

In some cases, the identification of a resonant value for inclusive teaching was accompanied by a wondering or an experience also embodied by their current self. Kayla, in response to the TU Achievement poem, wrote “understanding experience and barriers is super important—how can we possibly make it equitable?” This statement conveys that Kayla’s current self values “understanding experience and barriers,” *and* their current self struggles with how *we* on a broader scale might make *it* equitable. Although they did not explicitly define *we* or *it*, they appear to allude to some difficulty or tension associated with the value held by the current self. We see this also from Natalie: they state that “knowing [their] students as individuals is great. But it can become difficult whenever [they] have large class sizes.” With this response to the TU Identity poem, they have both identified a value held *and* a barrier faced by their current self. In both of these cases, the ability of their current self to enact a value they hold about mathematics education is tempered by their perception of barriers or lack of agency in achieving it.

Other instances of reflections on current selves took place in the form of an individual directly bringing into their reflection a practice that they currently embody or an experience of their current self which has relevance to the poem. For example, Skylar notes that they “keep trying to build more flexibility into [their] syllabus” while simultaneously juggling continual student requests for “extra grace,” a reflection which they wrote next to the lines *Offering exceptions in some cases— \\ a little extra grace?* in the KU Access poem. The question posed by the poem prompted Skylar to reflect on how their efforts to make their classroom—and syllabus—more inclusive do not appear to mitigate the experience of receiving requests for “extra grace” from students.

Reflections on a Possible Self

Reflections on a possible self included those in which the individual imagined or wondered about alternative versions of themselves as an instructor. For instance, some individuals engaged with the poems by contemplating new practices they might try out as instructors who get to know their students despite large class sizes (KU, Skylar) or as “flexible” instructors through the policies they create (KU, Tiersa). Markus and Nurius (1986) also consider past selves—who one was—as a form of possible selves and is another way in which one individual reflected on the poetry. Of the KU poem on Identity, Tiersa wrote: “I feel some shame at the way that I have failed in the past.”

Note that these reflections on the possible self sometimes occurred concurrently with reflections on the current self. For example, Taylor reflected on the TU poem on Access: “Structure is important for students in the classroom and this poem makes me see that I need structure too. Note: annotate my stuff for students.” Taylor first reflects on their value (“structure is important”) and follows up with a new idea for a practice (“annotate my stuff for students”) in alignment with a possible self (a more structured or organized instructor).

Individuals also connected with the poetry by describing certain teaching practices as either desirable or incompatible with their current self or practices, or as ones they imagined having difficulty attempting to enact or feeling afraid to enact. For instance, Ethan reacted to the TU poem on Identity by describing a way of engaging with students as incompatible with their personality: “I’m not a social person. It’s uncomfortable for me when students are friendly on a personal level. I don’t know if I can extend that sort of thing without it seeming fake.” Abel

reacted to the line “balancing grading policies” in the TU poem on Achievement by revealing a feared possible self; Abel wrote, “This is one of my fears, being fair.”

An ideal self was described by multiple individuals as they engaged with the poetry. In response to the lines *Everyone // with different incoming backgrounds // should feel like they can be successful in the class* in the KU poem on Achievement, Skylar identified a desired goal or motivation for instruction: “YES, I really resonate with this goal. It’s challenging, but definitely my aim.” As these were collective poems, sometimes individuals also described an ideal culture in which each of its members share similar notions of self. For instance, in response to the KU poem on Power, both Skylar and Tiersa expressed their desire for feedback from other instructors and a culture of observation within the department. In this way, Skylar and Tiersa reflected on a personal ideal self—the collegial practitioner self—as well as an alternative community in which each of its members embodied this ideal self.

Evaluative Selves

Evaluative selves are those which exist at a particular intersection of current and possible selves. They took the form of NIC members using notions of a possible self to evaluate the current self, and thus their current values and practices. Markus and Nurius (1986) identify this evaluative bridge between current and possible selves in their work, noting that possible selves provide “a context of additional meaning for the individual’s current behavior” (p. 955). In the context of these poetic reflections, we observed participants constructing bridges between possible and current selves by leveraging a possible self to evaluate the actions or values of their current self with regards to inclusive teaching.

For example, we consider Skylar’s response to the following lines from the KU Identity poem: *Being attentive // in the problems that I write; // Embedding // culturally relevant examples*. Skylar highlighted these lines and wrote next to them that they “like this idea, and think it’s something [they] need to work on.” In the same body of text, Skylar reflected on efforts they currently make to incorporate examples that are specific to the KU context, but expressed concern that those examples may still be “exclusionary.” Skylar considered two aspects of self—a possible self who is intentional about problem-writing and uses culturally relevant examples, and a current self which tries but may or may not be effectively incorporating these practices. This is a case in which the possible self functioned as an ideal self, utilized as a goal toward which the current self could work. We also saw one example in which a past self was used to evaluate a current self. In reflecting on the TU Achievement poem, Ethan wrote that they recognized from their own reflections the phrase *Hoping // for no disparaging trends // with pass rates or grades* and indicated that they “still really want to know what data from [their] own class would say.” By signifying that this experience of the past self remains resonant, a bridge is built through which Ethan frames their current curiosity as something which continues to have value to their current self.

NIC members also engaged in evaluative reflections through the questions they asked in response to their reading of the poetry. These questions called their current self into a place of judgment, without necessarily making a conclusive evaluation of the current self. We view these as equally productive; while they may not have expressed an additional insight into their current values and practices by understanding them through a comparative lens with a possible self, the asking of these questions created space for such evaluation. Tiersa reflected on the KU Identity poem by writing the following questions: “Do I always use the right language? Can students less familiar with English understand my problems?” Implicit in these questions is a possible self which *does* use the “right language” and *does* construct problems understandable by students

who are less familiar with English. Also implicit in the nature of questioning is the fact that Tiersa did not equate these attributes with their current self, but rather acknowledged a gap between their current self and this possible self in the context of inclusive teaching. We see something similar from Abel, who reflects on the line *Holding \ to high standards* by writing “Are my policies applicable and fair to all?” In asking this question, Abel called their current self into a place of judgment—there exists some ideal possible self who *does* have policies which are fair to all, but in asking whether their policies do presently have this quality, they invite into their reflection a comparison of their current self to this ideal possible self.

Conclusion & Implications

Engaging with poetry afforded stakeholders the opportunity to see, imagine, and evaluate themselves with respect to inclusive teaching along Gutiérrez’s (2009) dimensions of equity. By seeing the current self within the poems presented to NIC members, individuals felt validation regarding their values, beliefs, and practices surrounding inclusive teaching. Further, imagining possible selves offered individuals the opportunity to grapple with tensions and consider alternative ways of being as practitioners. Some participants also evaluated their current self through comparison to these possible selves, prompting consideration of who an ideal inclusive instructor is and how to become one. This reflection was perhaps a preliminary step toward what Ibarra (1999) describes as trying on a *provisional self*—a self of experimentation, a self that one tries on after observation of and engagement with role models (i.e., people with qualities that align with their ideal self). We found that this dialogue between the current and possible self spring boarded individuals’ reflections beyond identifying similar (or dissimilar) values or questioning the feasibility of certain practices and into a problem space for potential experimentation with the current self.

Notably, we also found that the poetry engagement made an impact on some individuals’ reflections in unique ways. Consider Taylor’s critiques of the TU poem on Access alongside their empathetic connection to students:

Despite not enjoying the poem as poetry, it did get me to see that doing these things is "easy", but the issue is getting students to make use of our actions. Thank you...If this poem was more structured, more clear, then I wouldn't have made connections for myself and they would have less meaning to me... Structure is important for students in the classroom and this poem makes me see that I need structure too.

Moreover, since this was *collective* poetry, individuals engaged with a variety of different ideas and insights about inclusive teaching. This perhaps gave them a more diverse repertoire of possible selves to construct regarding inclusive teaching. Some individuals expressed that reading collective poetry meant developing a closer understanding of the values of other NIC members, which could perhaps create space for additional community reflection.

Poetic transcription as a critical method highlights not just words or phrases, but also emotions and emphases. Through engaging with collective poetry, participants are invited to reflect on and discuss the ideas *and* feelings of fellow NIC members—and themselves—without placing peers in a vulnerable position. Future work could explore the impact of such reflections on the beliefs, values, and practices of undergraduate mathematics stakeholders. Skylar wrote that the process of reflecting on poetry was “a lot more impactful than [they] expected” and that they “got more and new insight into [their] colleagues’ perspectives on inclusive teaching and also [their] own.” This insight through novel methodology holds promise for extending our knowledge of how undergraduate mathematics stakeholders see, imagine, and evaluate themselves regarding inclusive teaching practices and values.

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