

THE SELF AS NOTICER: SUPPORTING PRESERVICE TEACHERS' DEVELOPING AWARENESS

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Gaining insight into how one's noticing shapes decision making can enable a teacher to reflect on how they frame, interpret, and respond to classroom activity and disrupt the influence of dominant ideologies. Working in the context of teacher education, we conjectured that systematically analyzing and reflecting on their own noticing can enable preservice teachers (PSTs) in mathematics to develop more equitable practices. Using data from summative assignments in a course on advancing equitable teaching, we investigate how PSTs use lenses of equitable teaching to make sense of their noticing and develop conceptions of equity. Analysis reveals that PSTs engaged in meaningful reflection and adopted terms from the course but avoided discussing the sociopolitical dimensions of instruction. These findings have implications for course design and facilitation in the context of developing PSTs' noticing for equity.

Keywords: Preservice teacher education, instructional vision, social justice

Objectives of the study

Teacher noticing, which encompasses how teachers attend to and interpret details of classroom activity, has been recognized as an important construct for equitable teaching practice (Schack et al, 2017; Scheiner, 2021). How teachers notice interactions is situated within dominant narratives from the history of mathematics education as a field (Sherin et al, 2011). Especially in Western education, mathematics has been characterized as an objective subject without social or political implications, despite a complex legacy of racialized, gendered, and otherwise biased structures and institutions (Gutierrez, 2018). Through that framing, math education continues to be a site for reproducing dominant narratives about what counts as “smart,” who is capable of mathematics, and related ideologies that undermine efforts toward equitable education (Louie, 2017). One approach to disrupting those ideologies is for teachers to develop an awareness of how their noticing is shaped by broader sociopolitical systems and their personal histories within those systems. As the influence of dominant narratives becomes more visible, teachers are able to recognize biases and blind spots in their noticing, empowering them to reframe their conceptions of classroom activity and cultivate instructional practices that support equity (Mendoza et al, 2021). Gaining insight into oneself as a noticer and understanding how noticing shapes moment-by-moment decision making can therefore enable a teacher to reflect on how they frame, interpret, and respond to classroom activity and disrupt the influence of dominant ideologies (Louie et al., 2021; Patterson Williams et al, 2020).

Working in the context of teacher education, we conjectured that developing insight into oneself as a noticer can enable preservice teachers (PSTs) to develop more equitable practices. We enter this conversation by investigating pedagogies for supporting preservice teachers in the process of gaining insight into their noticing practices. In response to the constraints imposed on education by the COVID-19 pandemic, we adapted a course for PSTs focused on learning to systematically notice and analyze teaching practice (see Sherin et al, 2009). The course centered on developing “lenses” for noticing and advancing equitable teaching, including attending to student thinking, discourse, positioning, and identity. We structured the course around a series of noticing tasks that entailed using those lenses to analyze how noticing, instruction, and

commitments come to life in moment-to-moment interactions. As a summative assignment, the PSTs reflected on and analyzed those noticing tasks in order to represent their noticing as a system informed by the lenses the course had introduced. In this study, we ask: how do preservice teachers use lenses of equitable teaching to make sense of their noticing practices? What do their self-analyses reveal about their emerging conceptions of equitable instruction?

Theoretical framework

Noticing is especially central to teaching for equity, as noticing is shaped and constrained by ideologies that frame what teachers deem worthy of attention and how they interpret those details (Louie, 2017). Noticing occurs continuously as an active and subjective process, whether or not the teacher in question is conscious of attending to certain phenomena over others or interpreting details in particular ways. Becoming aware of one's noticing, however, enables a teacher to understand, question, broaden, and disrupt their noticing practices (Erickson, 2011; Mason, 2009). Similarly, ideologies are shaping noticing whether a teacher is aware of them or not; awareness helps one see what ideologies are shaping noticing and how, i.e. are they supports or barriers to advancing equity in teaching.

The concept of frames is of particular importance for unpacking the relationship between ideologies and noticing. Hand (2012) describes frames as structures that establish “expectations for how the emerging activity should unfold and for the roles that different individuals will take within it” (p. 251). Louie (2021) builds on this understanding, characterizing frames as narratives that shape both *what* and *how* we notice, and which “take on authority as they are told and retold [to] influence their tellers’ and others’ subsequent framing” (p. 3). Frames are both internal structures that teachers rely on to make sense of classroom activity *and* modes of representation and communication with students about the content and context of learning in the discipline. Frames that are based in dominant ideologies, e.g., white racial knowledge or race denialism (“colorblindness”), can perpetuate those ideologies (Reisman et al, 2020; Bonilla-Silva, 2006). On the other hand, frames based in challenging inequitable systems and rehumanizing learning can disrupt dominant ideologies (Gutierrez, 2018; Louie, 2017; McKinney de Royston et al, 2021).

The relationships between ideologies, frames, and noticing have prompted attention to how teachers’ self-awareness in noticing develops. For instance, Patterson Williams et al (2020) offer a model of teacher noticing that centers on cultivating an “inner witness” by attending to how equity unfolds in “micro-moments within fleeting classroom discourse” (p. 505). Mason (2009) parses the development of teacher awareness into phases of preparation (e.g. structuring and planning), paration (the enactment of teaching), and postparation (e.g., reflection and interpretation). Postparation practices then provide the basis for preparation in continuing instruction. Philip (2019) describes practices for gaining insight into one’s teaching through narrating, re-narrating, and re-envisioning episodes of teaching. Across these frameworks, authors highlight the importance of reflecting on past practice to improve future practice in iterative cycles. In the context of teacher education, this insight indicates pedagogies for supporting the development of self-awareness with pre-service teachers. In the course design that led to this study, we drew on these frameworks to engage PSTs in representing, reviewing, and reinterpreting their noticing as the manifestation of commitments, beliefs, and ideologies they consciously and unconsciously hold.

Research methods

Study context

This study was situated in a required course for a combined Master of Arts in Teaching and teaching credential program that took place in the fall of 2020. The course, titled “Learning to Learn from Teaching,” engaged preservice teachers in analyzing representations of teaching practice (e.g., videos and transcripts) to develop their noticing practices and their *awareness* of their noticing. Through course readings, discussions, and assignments, we provided PSTs with multiple lenses that together constitute a model of responsive and equitable teaching. PSTs were directed to use the lenses to analyze and reflect on representations of teaching in a series of noticing tasks assigned throughout the course. Their observations and reflections were recorded in a noticing journal, which documented PSTs’ noticing in a form they could review and reference. Examples of lenses and associated readings are listed in Table 1.

Table 1: Lenses and readings from the course

Lens	Summary	Readings
Understanding students’ identities	Knowing, doing, and being are intertwined aspects of learning. Students’ identities, practices, and knowledge are all continuously expressed and developing in the classroom.	Herrenkohl & Mertl, 2010
Student thinking (strengths-based perspective)	“Smartness” in math has been narrowly defined in terms of speed, accuracy, and “right” answers. Teachers can challenge this ideology by focusing on students’ strengths instead of deficits and moving beyond the right/wrong binary to understand and appreciate student thinking.	Louie, 2017; Jilk, 2016
Discourse and accountable talk	Classroom discussions can be understood through three forms of accountability: to knowledge, to standards of reasoning, and to the learning community. Rich classroom discourse involves students collaborating to navigate the process of sensemaking and guide discussion through questioning, reasoning, and mutual support.	Hufferd-Ackles et al, 2004; Michaels et al, 2008

Prior iterations of the course culminated in PSTs planning, enacting, recording, and analyzing a lesson in their student teaching placements. Due to the COVID-19 pandemic, however, PSTs were not in classrooms and therefore could not produce and analyze representations of their own teaching. As an alternative, we engaged PSTs in a method of self-analysis using their interpretations of videos and transcripts in the noticing journals as data. In prior work, we developed an analytic method to characterize the relationship between teachers’ commitments, noticing practices, and instructional practices (see Authors, 2022), which we refer to as a system of noticing. We conjectured that the process of constructing a personal system of noticing through reflection and analysis of noticing tasks would support PSTs developing the kind of awareness that would support equitable practice in teaching.

Developing a system of noticing first required PSTs to review their responses to noticing tasks and make distinctions between their observations and their inferences. PSTs identified patterns in what they tend to notice (observations) and how they interpreted those details (inferences). They then grouped their patterns of observations and the associated inferences into

clusters that shared a noticing lens. Figure 1 provides an example of a cluster of observations and inferences around a noticing lens.

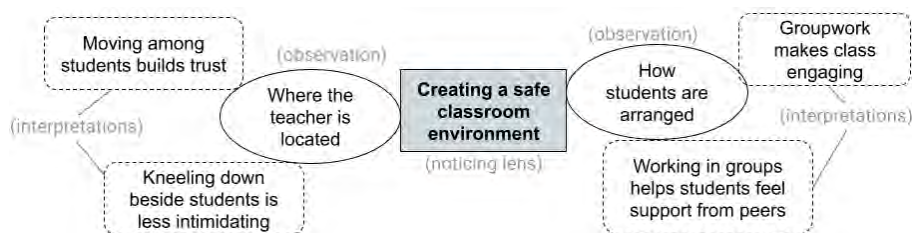


Figure 1. Example of a system of noticing

Through this process, we conjectured that PSTs would develop the ability to distinguish between an objective observation and an interpretation, thereby revealing the influence of commitments, ideologies, and dominant narratives on how they interpret what they see. Grouping the observations and inferences and naming that cluster as a lens then helps preservice teachers identify the specific narratives, ideologies, and commitments at play. By making these aspects of noticing visible, we intended to position preservice teachers to consider how their noticing may or may not support equity and determine aspects of their noticing they want to refine, expand, or disrupt. In addition to creating a visual representation of their system of noticing, the preservice teachers wrote a paper explaining how they developed and interpreted their system of noticing using their noticing task responses and the literature from the class. The paper consisted of three parts: 1, explain the noticing lenses using evidence from the noticing tasks; 2, analyze the lenses using the course readings; and 3, identify areas of noticing to expand or disrupt and describe a plan for doing so.

Data analysis

Of the 11 mathematics candidates enrolled in the course, five consented to participate in this study. Data consists of their summative system of noticing assignments, which include a visual representation of the system of noticing and a reflection paper explaining the data from their noticing tasks and the concepts from course readings that they used to develop that representation. We employed iterative qualitative methods (Miles & Huberman, 1994) to examine the ways that PSTs took up lenses of equitable and responsive teaching and the conceptions of equitable teaching their work revealed. First, both authors read through, made margin comments, and wrote memos about each paper. The authors then discussed their comments and memos, identifying categories and themes that stood out across their impressions. These themes concerned which lenses were raised by the PSTs, what kinds of explanations they provided to justify prioritizing those lenses, and how their explanations related to the course materials and goals. Following these discussions, the authors returned to the data to conduct rounds of focused coding (Saldaña, 2011) around three areas: how terms were used (e.g. definitions and examples), critical statements (e.g. “students often feel vulnerable”, “math is seen as irrelevant,”) and normative or values statements (e.g. “teachers should do X”, “I want to create a classroom that is Y”). Finally, the authors reviewed the readings that PSTs cited most to consider how student definitions aligned with the definitions of concepts in the course materials and the extent to which their critical and normative stances were consistent with the aims of the course.

Results

Analysis revealed two main findings. First, PSTs appear to have taken up the fundamental aims and practices of the course by trying on lenses to re-envision and re-imagine schooling in light of their commitments. Second, PSTs applied language from the course readings and discussions, but often defined those terms in partial or adapted forms that were more compatible with their pre-existing frames. These redefinitions showed a tendency to avoid the broader systemic issues and ideologies that influence classroom activity.

Finding 1: Interpreting noticing through beliefs and commitments

Although this portion of the assignment asked PSTs to describe what they noticed and inferred in the noticing tasks, all five PSTs in this study consistently made normative or aspirational statements about teaching. Student 1, for instance, made the arguments that “students should develop ideas, have authority in the classroom, and be responsible for their knowledge” and “it is crucial to create a safe, supporting, and inclusive place...students should have the opportunity to practice their identity, individuality, and whom they are.” Student 2 stated that “we need to value students for who they are and acknowledge their differences” and Student 5 made claims like “students should lead the direction of the discussion” and “teachers need to learn how to really listen to their students.” In a similar vein, Student 4 linked their understandings of key concepts to value statements: “Tools are shared through communicating with one another, thus, communication is a practice that must be developed to promote learning”; “Students develop their identity through interactions, thus participation is key in providing students with an opportunity to develop their identity”; “Knowing, doing, and being are all intertwined, hence it is important to study all aspects.” These claims about the purposes of teaching indicate that these PSTs were articulating their beliefs and commitments about how teaching *should* be and understanding those commitments as the basis for their noticing.

In several cases, PSTs expressed normative or aspirational claims by pairing critiques of schooling with alternatives. Student 1 articulated these dyads in each section of their paper, starting with: “in many cases, the teacher is considered as the only authority in the classroom...I believe in a student centered classroom.” In their next argument, they state, “students cannot see the connection between what they learn as mathematics and how it is used...students must become aware of...the applications of the subject.” Finally, they point out that “all students come from different backgrounds and stories and we should not expect them to adjust their identities to the dominant culture. Students should be appreciated as individuals with unique thoughts, beliefs, values, and identities.” Student 4 used the same format, at one point unpacking a specific observation by explaining that “this student might have felt left out...teachers must not turn away different representations of participation because it may hinder students’ opportunities to learn. Thus, students must not only be encouraged to participate but more importantly must be offered assistance to participate.” Later in their paper, Student 4 presses on assumptions about the nature of doing mathematics, noting that “students have been conditioned to believe that if they are fast and accurate, then they are smart. However, my noticing lens disrupts this narrative because my... noticing lenses value participation and use participation to redefine smartness.”

Students 2, 3, and 5 reverse these dyads, with Student 2 saying, “I look at the positive interactions or ideas...teachers may focus too much on what students are doing wrong,” and Student 3 expressing that they pay more attention to student-led discussions because they have observed classrooms in which “there is not a lot of room for discussion, just lectures and note taking.” Student 3 also provides a more personal example, saying, “I remember being in the classroom and not wanting to provide my opinions because I was afraid of being wrong and

other students judging me for it. So, when I observe students, I look to make sure that everyone feels comfortable being wrong and learning from it.” Student 5 makes a broader claim about their beliefs on the nature of learning: “students should be given the opportunity to construct knowledge for themselves. If students are constantly spoon-fed knowledge without a chance to build it for themselves, we position them as incompetent learners that need someone to build it for them.” Across these examples, we see PSTs using their normative commitments as frames to interpret classroom activity. Instructional practices they observed, interpersonal dynamics, and messages implied by teacher actions were interpreted in relation to beliefs about what is valuable in teaching and learning, which in turn pointed PSTs to alternatives they conceptualized as solutions to persistent issues in schooling.

Finding 2: Redefining terms from the course to fit with pre-existing frames

PSTs used terms from the course, but often adapted them to fit with their pre-existing frames. This was most visible when PSTs explicitly provided definitions and illustrations that were partial or selective versions of the concepts introduced in class. Student 2, for instance, begins their paper by defining “noticing” as “a critical and analytical tool that...pertains to student attainment, cognition, and thinking, as well as the educational environments where such facets take place.” The framing emphasized in the course, however, sought to define noticing as a typically unconscious manifestation of a teacher’s identity, their personal and social history, and the systems in which they work, rather than as an analytical tool that teachers can choose to aim at students. Student 2’s focus on attainment and cognition appears again when they use the term “accountability” to mean “where students are held accountable in understanding certain content material...[and] held accountable in finding answers, persevering if struggling.” This conception of accountability indicates a partial understanding of “accountable talk” from the course readings, as it omits Michaels et al’s (2008) emphasis on the social dimension of accountability to a learning community. The idea of “perseverance through struggle”, on the other hand, does *not* appear in the course materials. Student 3 applied a similar partial understanding to interpret a video shown during class, writing that “during the discussion, some students were right while others were wrong, but there was never any judgment in the room.” In the course, however, the rationale for showing that video was to demonstrate a teacher rejecting the frame of the “right/wrong binary”, valuing student sensemaking *instead* of thinking in terms of students being right or wrong.

The tendency toward partial or selective understanding is further illustrated by what PSTs did *not* talk about when explaining or analyzing a given concept. For instance, four of the five PSTs cited Philip et al (2016) as evidence that they attended to power and positioning. The reading, whose title refers to “becoming racially literate” and “racial-ideological micro-contestations” (p. 361), unpacks a classroom interaction in terms of the teacher’s avoidance of talk about race, which tacitly enables racial antagonism between students and excludes a Black student by delegitimizing his insights about content that involves Black communities. Student 5 argued that the problems in that situation arose because the teacher “positioned himself as the authority figure in the room by acting as the ‘gatekeeper of knowledge’”, in accord with a claim that asking the question “was the teacher acting as the ‘gatekeeper of knowledge’...allows us to analyze who has the power in the classroom.” While questions of authority and gatekeeping are relevant to this example, the absence of race, identity, and power dynamics beyond the interpersonal scale in this account is conspicuous. Likewise, Student 3 diagnosed the problems in the Philip et al reading as “[the student] being disregarded so much and constantly defending his opinion to the point where he just stopped.” Again, this analysis brings up relevant points, but

there is scant mention of race despite the authors' insistence that race, and particularly the teacher's refusal or inability to *discuss* race, is crucial to understanding the example. Student 1, in contrast, did mention race in the context of this example, but they interpreted it in colorblind terms: "we ostracize an individual due to simply the color of their skin, but at the end of the day, we are all human, so why do these discrepancies exist?" This response conflicts with the authors' argument that a student's race entails legitimate differences in experience and perspective, which can afford insights that should be recognized.

With regard to Philip et al (2016) and several other examples, PSTs showed a tendency to omit the sociopolitical aspects of a concept or situation by choosing to focus on smaller scale interpersonal perspectives. All five PSTs prioritized some version of students feeling safe, welcome, and included, and four made claims about attending to positioning. In their explanations and examples, they focused primarily on how teachers' actions affected students. Student 4, for example, stated that "teachers can create an inclusive classroom by asking students questions and inviting students to participate." Student 5 claims, "I very much focus on how students are positioned in the classroom. For example...where the knowledge is coming from contributes to the power dynamic between teacher and student." Their understanding of positioning related to how students were positioned *within* the classroom through interactions, without engaging with how students were already positioned *coming into* the classroom based on their identities and histories. Likewise, PSTs' accounts of students feeling safe/unsafe or welcome/unwelcome focused on how teachers' actions could *cause* a student to feel that way, rather than considering how certain students may not feel safe or welcome within school institutions even before a teacher acts.

Discussion

Findings suggest that PSTs took up the *practices* of developing self-awareness that were facilitated by the course design, although their responses did not necessarily capture the details of the content. Even when PSTs brought up different ideas than were discussed in the course, their practices of surfacing assumptions and interpretations, critiquing the status quo, and reimagining instruction were consistent with the course aims. The prevalence of normative and aspirational statements indicates that PSTs were examining their noticing in the context of their beliefs and commitments, which complements the course focus on revealing the power of ideologies and frames. Through reflection and analysis of representations of their own practices, PSTs were beginning to see the connections between a teacher's ideologies and commitments, what they notice, and the actions they can take to embody a vision of responsive and equitable teaching. This is consistent with other research on developing PSTs awareness (e.g., Philip, 2019). While the conceptions they applied within those practices were at times partial or misaligned with the course content, it is important to recall that these were *emerging* conceptions; many of the ideas and frameworks in the course were entirely new for the PSTs. Research on developing frames for equitable teaching speaks to the difficulty of changing frames, even with experienced educators who participate in extended professional development (Louie, 2017; Reisman et al, 2020). For PSTs, this process is additionally complicated because they lack the frame of reference on which experienced teachers rely. Without their own experiences of the classroom context to draw on, pre-service teachers often struggle with what details are noteworthy in a case and how to interpret those details (Darling-Hammond & Hammerness, 2002; van Es et al, 2017). Given the novelty of the course material, the fact that PSTs were applying relevant practices in efforts to make sense of their noticing in terms of their commitments indicates they began to adopt the perspectives intended by the course.

It is noteworthy, however, that the areas in which PSTs' responses departed most from the course aims revolved around sociopolitical awareness. Despite efforts throughout the course to center and unpack the effects of social histories and systems on instruction, the PSTs rarely mentioned the sociopolitical dimension. As a counterpoint, McKinney de Royston et al (2021) consider how Black educators enact frames of care and protection towards Black students and find that their frames are characterized by "clarity about the historical and political landscape" that illuminates "racialized disparities and experiences in schools...as by-products of systemic racism" (p. 73). This clarity is expressed in "politicized caring", which motivates and empowers the teachers and school leaders to disrupt harmful narratives and structures in the name of making students feel safe and cared for. By contrast, the PSTs here bring in a frame of *apolitical* caring. In these reflections, PSTs emphasize creating a sense of safety and students feeling welcome or at home, but without addressing the broader social and systemic issues that affect students' experiences of schooling. This pattern was visible even in PSTs' responses to representations of explicitly racialized situations, as in the Philip et al (2016) example. This fits with a more generalized tendency to view the classroom as a neutral space until it is shaped by teacher actions. Treating the classroom as a neutral space (rather than one inherently pre-shaped by sociopolitical factors) frames creating a sense of student safety as a question of *not* doing things to make them feel *unsafe* as individuals within classroom interactions, rather than disrupting or counteracting broader sociopolitical narratives. The absence of a sociopolitical frame, even under the guise of neutrality or valuing interpersonal relationships, ultimately reproduces a colorblind ideology that perpetuates harmful narratives and delegitimizes the experiences of students from historically non-dominant communities (Bonilla-Silva, 2016). These findings therefore raise questions regarding what kinds of pedagogies, artifacts, and supports are needed for PSTs to cultivate systemic *and* interpersonal perspectives as compatible and complementary frames (Weis & Fine, 2012).

Limitations and future research

The systems of noticing that PSTs developed and the reflections they analyzed to do so were produced by engaging with a set of artifacts, representations, and readings that were selected by the authors. As teacher educators, we were not neutral or objective in the selection of these materials. Rather, we attempted to curate a set of materials that support a vision of equitable noticing and instruction that we hoped to cultivate with this group of PSTs. It is likely that engaging with different representations or being informed by different literature would reveal other tendencies in PSTs' noticing, ideologies, and commitments. The study is also limited by its small size, both in terms of the number of PSTs involved and by virtue of being a single instance of the course. This study represents only one iteration of guiding this process of development, and findings reveal both areas of success and possibilities for improvement. Further research is needed to consider the implications of these findings for course design and facilitation in the context of developing noticing for equity and social justice. Moreover, a single course is clearly insufficient for deep and lasting change given the complexity of noticing and the persistent nature of dominant ideologies and narratives. Future research will also address how this process can be supported and sustained in other PST courses and in professional development for early career teachers.

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