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Exploring Equity-Oriented Shifts in Teacher Candidates' Noticing

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Abstract: Many studies have investigated mathematics teacher noticing. Building on this research, we explore how the **F**raming-**A**ttending-**I**nterpreting-**R**esponding (**FAIR**) framework (Louie et al., 2021) enhances understanding of teacher candidates' noticing and how video clubs (van Es & Sherin, 2008) can support teacher candidates' equitable noticing. Our findings demonstrate (1) how the FAIR framework can help researchers attend to the sociopolitical framing that influences noticing and (2) how video clubs can support teacher candidates' equitable noticing.

Objectives and significance

Many studies across STEM disciplines have demonstrated that teacher noticing is important for equitable teaching (Luna, 2018; Van Es & Gamoran Sherin, 2002). In mathematics education specifically, researchers have studied equity-oriented teacher noticing and how such noticing changes teachers' beliefs about culture and power (Sherin et al., 2011; Hand, 2012). To conceptualize mathematics teacher noticing, some studies have used the **A**ttending-**I**nterpreting-**R**esponding (**AIR**) framework. Although the AIR framework decomposes elements of noticing for analysis, it overlooks fundamental impacts of the social, cultural, and political narratives that shape noticing (Louie et al., 2021). Therefore, in this study, we adopt the "**FAIR**" framework (**F**raming-**A**ttending-**I**nterpreting-**R**esponding; Louie et al., 2021) which adds a sociopolitical perspective (framing) to analysis of teachers' noticing. We apply this framework in our analysis of video clubs (Jilk, 2016; van Es & Sherin, 2008) in which teacher candidates share and discuss videos of their classroom teaching. In this study, we ask: how can using the FAIR framework enhance our understanding of shifts in teacher candidates' noticing during video clubs?

Theoretical background

Louie et al. (2021) developed the FAIR framework to conceptualize and analyze anti-deficit noticing. Anti-deficit noticing intentionally elevates the humanity, intelligence, and mathematical abilities of marginalized students in instructional interactions. This approach aims to counter deficit orientations toward minoritized students that often shape teachers' actions. Anti-deficit noticing is necessarily influenced by sociopolitical framing. Examples of deficit and anti-deficit noticing adapted from Louie et al. (2021) are presented in Table 1.

Table 1
Deficit Noticing and Anti-deficit Noticing (Adapted from Louie et al., 2021, p. 99 & p. 102)

Framing	Deficit Noticing	Anti-deficit Noticing
Student	Students are primarily mathematical receivers who are labeled superior or inferior	Students are full human beings who bring resources to their learning
Mathematics	Mathematics learning is a process of absorbing fixed knowledge focusing on accuracy and correctness	Mathematics learning is a creative exploration of ideas
Interaction	Student interactions are relatively unimportant for learning	Student interactions and interpersonal relationships are integral to learning

While Louie et al. (2021) analyzed one-on-one teacher *interviews*, we propose that this framework could also help researchers and teacher educators trace shifts in teacher candidates' noticing-in-practice during *video clubs*. In this paper, we use the FAIR framework to illustrate teacher candidates' shifts toward anti-deficit noticing.

Method

Data for this study comes from a methods course designed to prepare early childhood teacher candidates to teach PreK-5. The course took place at a large university in the midwestern US. As part of the course, teacher candidates participated in video clubs. We focus in this paper on a video club comprising four teacher candidates and one instructor (the second author). A teacher candidate, Gemma, shared a video for discussion. Using constant-comparative analysis (Strauss & Corbin, 1990), we coded the video with categories from the FAIR framework.

Finding and discussions

Our analysis illustrates shifts in teacher candidates' noticing during a video club focusing on Gemma's student teaching (Kindergarten, math). We demonstrate shifts in teacher candidates' noticing from perpetuating dominant narratives toward anti-deficit noticing. Analytically, the FAIR framework enabled us to recognize these shifts. These findings also illustrate the potential of video clubs to support equitable noticing.

At the beginning of the video club, teacher candidates' noticing was focused on dominant narratives about mathematics learning (mathematics is a process of absorbing fixed knowledge). The instructor first paused the video clip to note Gemma's expectations for students' answers. Gemma *attended* to the relationship between word problems and the students while answering the question. She *interpreted* word problems as "tricky" for her students, explaining that her students lacked experiences with word problems, particularly about subtraction. She *responded* by suggesting a strategy of linking specific words to procedures of addition and subtraction, focusing on accuracy and correctness achieved by decoding word problems. *Framing* in this episode aligns with dominant narratives that describe mathematics learning as absorption of fixed knowledge. Rather than considering students' resources and experiences, Gemma focused on supporting students to follow a procedure that might reliably lead to success with addition and subtraction word problems. To shift this framing, the instructor suggested another possible response: "bringing [students'] related experiences into word problems." The instructor's idea began to reframe students as "full human with many resources."

Later in the video club, teacher candidates shifted toward anti-deficit noticing by considering one student as a "full human being" with own personality and participation style. Gemma *attended* to a student who was not writing down an answer for a problem. Rather than *interpreting* this behavior as an indicator that the student was unable to answer the problem, she suggested that "he is not confident enough in his skill." The instructor suggested that the student might be nervous about showing Gemma a different answer than she was expecting. Rather than focusing on procedural skills as in the episode above, the group considered possible *responses* that focused on the students' individual needs and strengths, as well as the generative nature of student interactions, such as "highlight him when the student gets the right answer to build [his] self-confidence," "give extra problems to improve his confidence," and "let students compare their answers with a buddy." Building on this discussion, the instructor explicitly asked Gemma to consider the students' strengths: "Are there times in math where he really shines?" Gemma responded to the question by reflecting on an outstanding moment for the student. Through this interaction, Gemma's in-the-moment *frame* shifted toward anti-deficit noticing.

These examples demonstrate how **F**raming enhanced **AIR** analysis by explicitly attending to sociopolitical lenses, and they suggest the promise of video club as an approach for supporting anti-deficit noticing by offering teacher candidates the opportunity to reframe their images of mathematics, students, and interactions.

Conclusion and implications

Our findings have implications for the design of method courses for math teacher candidates that aim to support equitable teaching. Our data demonstrate how video clubs can enhance teacher candidates' equitable noticing by inviting anti-deficit noticing around teacher candidates' classroom videos. Methodologically, this study illustrates how the FAIR framework can be used to analyze shifts in teacher candidates' noticing.

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