FORUM

Expanding the interpretive functions of framing for understanding marginalized students' participation in collaboration and learning

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Abstract
This commentary to Ha and Kim's article suggests three ways to expand the interpretive functions of framing to explore and support marginalized students' participation in collaboration and learning, based on our comprehensive review of Ha and Kim's and other relevant studies. We argue that framing can be a useful tool for (1) understanding both moment-to-moment and long-term changes in classroom communities, (2) gaining insights into students' identity work and figured worlds, and (3) exploring the dynamics of students' epistemological and positional perceptions. Researchers and practitioners could build on these arguments about the expansive uses of framing to foster students' equitable interactions and productive learning in classroom communities.

Keywords Framing · Small group · Positioning · Identity · Epistemic practice

요약
본 논평에서는 프레이밍이라는 해석적 틀을 교육 연구에 응용하는 세 가지 방법을 제안한다. 프레이밍은 "지금 여기서 무슨 일이 일어나고 있는가?"에 대한 사람들의 인식과 기대를 의미한다. 본 논평에서는 본 호에 실린 하희수와 김희백의 논문을 포함한 다양한 선행 연구들을 바탕으로, 프레이밍을 활용하여 사회적으로 소외된 학생들의 협력과 학습을 분석하는 방안에 초점을 맞춘다. 프레이밍을 활용하는 세 가지 방안은 다음

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과 같다. 첫째, 프레이밍은 교실 공동체에서 순간순간 그리고 장기간에 걸쳐 이루어지는 변화들을 탐색하는 데 유용하게 쓰일 수 있다. 둘째, 프레이밍은 학생들의 정체성 형성과 변화를 이해하는 데 있어 유용한 정보를 제공할 수 있다. 마지막으로, 프레이밍은 역동적으로 변화하는 학생들의 인식론적 관점과 위치 짓기를 분석하는 데 유용하게 쓰일 수 있다. 본 논평에서 제안하는 프레이밍 활용 방안들을 통해, 연구자들과 실행가들은 교실 공동체에서 보다 평등한 상호작용과 생산적인 학습을 지원하기 위한 시사점을 얻을 수 있을 것이다.

키워드 프레이밍 · 교실 공동체 · 정체성 · 인식론 · 위치 짓기

This forum paper is in response to Heesoo Ha and Heui-Baik Kim's article in this issue that employed the concept of framing to explore how a student, who was marginalized in peer relationships in a Korean science classroom, attempted to position himself as an accepted member in his small group and how the attempts were constrained or afforded by other students in the group. Framing, which was originally suggested by Goffman (1974), is defined as "the set of expectations that a person brings to a social situation" that could be understood as their generally tacit answer to the question, "what is it that's going on here?" (Goffman 1974, p. 8). Ha and Kim examined the marginalized student, June's and other group members' epistemological and positional framing—their moment-to-moment perceptions of knowledge, themselves, and others—to explore their social interactions and collective epistemic work in the science classroom.

- using framing as a tool to understand both moment-to-moment and long-term changes in classroom communities,
- using framing as a tool to attend to students' identity work, figured worlds, and cultures,
- and using framing as a tool to explore the dynamics of students' epistemological and positional perceptions.

These three ways extend how the notion of framing has been typically used in studies in science education. Below, we explain how Ha and Kim's study provides insights about these three ways and how future studies could use framing in these expansive ways to understand and support marginalized students' participation in collaboration and learning, based on our literature review.

Using framing as a tool to understand both moment-to-moment and long-term changes in classroom communities

Ha and Kim's findings indicate that the students' framing of the marginalized student—June—shifted both on a moment-to-moment basis during activities as well as over a longer period of time. Based on our review of Ha and Kim's paper and other studies, we argue that it is important and useful to explore how students' moment-to-moment framing of activities, themselves, and others interact and co-evolve with collective frames in the classroom community in the long-term.

Goffman's (1974) original definition of framing suggests the *moment-to-moment variability of framing*, as framing is a person's interpretation of a social situation. However, framing does not get created solely by an individual at a moment. People draw upon, adapt, and contest socially and culturally constructed frames that include collective expectations about what is appropriate or not in activities and interactions (Hand, Penuel and Gutiérrez 2012). This suggests that there are *long-term, social processes of framing*, happening in multiple levels of social contexts, through which people construct and negotiate individual, group-level, and cultural frames over time (Hand, Penuel and Gutiérrez 2012). In educational contexts, an example of the group-level frame is what a class agrees upon about what ideas and ways of participation are legitimate in a kind of class activity. An example of the cultural frame is the "doing school" frame, characterized by Lemke (1990

While these approaches suggest the importance of attending to both moment-to-moment and long-term processes of framing, empirical studies in science education that have used the perspective of framing so far have mostly focused on exploring how students' or teachers' framing shifts on a moment-to-moment basis and what cues the shifts (e.g., Hutchison and Hammer 2010). Studies have rarely focused on what gets accumulated over time through such framing shifts or how the shifts interact with larger frames in broader communities, except for characterizing students' framing as either productive or unproductive based on well-known cultural frames, such as the "doing school" frame.

Previous studies on students' and teachers' moment-to-moment framing in science classrooms have made important contributions to the field. They have helped researchers and teachers understand abrupt shifts in students' participation in class activities and collaborative group work (e.g., Hutchison and Hammer 2010). The studies also have provided methodological approaches to analyze classroom discourses with the perspective of framing and made it tangible to look for contextual cues or teachers' supports that prompt shifts in students' framing and participation (e.g., Rosenberg, Hammer and Phelan 2006).

However, as we aim to understand and support marginalized students' participation in class activities, we argue that it is important for future studies to attend to not only moment-to-moment shifts in students' framing but also how the shifts interact with collective frames that are constructed over a longer period of time, for example, by focusing on what gets accumulated and change over time. There are a number of reasons for this. First, marginalized students' opportunities to meaningfully participate in collaboration and learning should not be a one-off chance, and we, educational researchers, should seek for sustainable and systemic ways to support students' productive participation and learning in classroom communities. Second, because of the interconnectedness between the moment-to-moment framing and the long-term construction and negotiation of collective frames, it is hard to understand students' participation in collaboration and class activities comprehensively by just focusing on snapshots of classroom interactions. Ha and Kim's study showed the importance of attending to classroom cultures, including peer cultures, for understanding social interactions between June and other students. Finally, the conceptual tool of framing can provide unique insights into understanding both moment-to-moment and long-term changes in social interactions, compared to other theoretical constructs that mainly focus on either one of the timescales in classroom interactions—e.g., regarding the long-term timescale, the development of classroom norms and cultures. Framing can provide information about concrete cues and supports that bring about repeated shifts in students' moment-to-moment framing and therefore can contribute to the long-term development of social resources (e.g., "new norms") in classroom communities.

Ha and Kim's study provides an example of exploring not only how students' moment-to-moment interactions and perceptions reflect expectations of larger communities but

also how such perceptions and expectations shift over time. The students in the focal small group showed changes in their perceptions about June after interacting with him in a series of small-group activities. One of the students, Jane, said, "[I found that] June's words are not all strange," in the interview after the eighth lesson. Another student, Lin, said, "I think I learned how to pay attention to June's words more and more as the class went on." These responses imply that students' interactions in small groups can influence how a student is positioned in the classroom community over time. In the next section, we move on to discuss how framing could become a useful tool for understanding students' construction and negotiation of identities in the sociocultural contexts of classroom communities and broader societies.

Using framing as a tool to attend to students' identity work and figured worlds

In addition to exploring how students' framing co-evolves with long-term shifts in classroom communities, a framing analysis could be also expanded to include a deeper analysis of students' *identity work* that gets affected by moment-to-moment classroom interactions as well as sociocultural expectations in the classroom and broader societies. Identity work means an individual's construction and negotiation of their identity(ies)—sense of who they are—in relation to the subject matter and other people over time (Carlone, Scott and Lowder 2014). Science classrooms are one site for such work.

A framing analysis is useful for understanding students' identity work in two ways. First, the analysis of students' moment-to-moment framing provides information about dynamic processes of how students negotiate their identities through interactions and experiences in the classroom (Pattison, Gontan, Ramos-Montañez, Shagott, Francisco and Dierking 2020). Second, the analysis of students' epistemological and positional framing could also help unpack students' *figured worlds* that provide contexts for their identity work, and at the same time, reflect sociocultural and historical dynamics in broader societies. Dorothy Holland and her colleagues (1998) described figured worlds as sociohistorical, collective "realm[s] of interpretation" (p. 52) that provide the contexts of meaning for actions and understandings that people come to make of themselves and others in these worlds. Figured worlds represent social expectations, which reflect privilege, obligations, rules, and power dynamics in larger societies but also have aspects that are unique to the groups, "that influence (but do not completely dictate) the ways people speak, behave, and 'practice' within social spaces" (Hatt 2007, pp. 149–150).

Previous studies that focused on examining students' identity work provided substantial evidence for the connections among students' identity work, sociocultural expectations in their figured worlds, and their moment-to-moment perceptions—framing—of activities, themselves, and others, even though most of the studies did not call the perceptions as "framing" explicitly. For example, in their study to explore diverse students' identity work in science classrooms over time, Heidi Carlone, Scott and Lowder (2014) described how race, class, and gender figured into students' perceptions about themselves, peers, and science in particular classroom interactions. These perceptions—students' epistemological and positional framings—led to successes in and threats to their identity work related to becoming scientific. For another example, Lori Kurth, Anderson and Palincsar (2002) examined an African American girl, Carla's, opportunities to participate in group activities in a science classroom and found that students' actions were

connected to the histories of their families and practices in the classroom that reflected privilege and discrimination in our society. In other words, the ideologies and sociopolitical aspects that influence society outside of the classroom were reflected in students' moment-to-moment framing, interactions, and practices—and consequently, their identity work.

Ha and Kim's analysis highlights the connection between the small-group students' epistemological and positional framing in specific interactions and June's identity. Students' framing guided *who June was allowed to be* in the group interactions; and *who June was* was dynamically negotiated and constructed over time through accumulative interactions in the small group. Ha and Kim did not directly address cultural stereotypes or inequities with respect to race, gender, or socioeconomic status in their study. And this makes sense: they noted that their focal participants were homogenous in terms of broad characterizations of race, gender, and class. However, the authors carefully attended to the microcultures within a single cultural group. In particular, there seem to be important elements of peer culture and school culture at play in the students' figured worlds, reflecting social expectations about what it means to "be a good student," "be a helpful peer," "make meaningful contributions," or "do what to do or not to do" in a Korean science classroom. These expectations shaped the norms and expectations that June and others took up for positioning themselves and peers within the figured world of the classroom.

We propose that framing is a useful analytic tool in the sense that it not only features existing relationships and structures in people's figured worlds, but it also allows for examination of how those change in the moment and over time. In Ha and Kim's case, June made continuous efforts to renegotiate his position in the group by actively participating in the group work. In other words,June was doing identity work to make himself an "accepted member" by continually attempting to re-frame "what was going on here" in the small group interactions. As the authors pointed out, some of his efforts were acknowledged by other students and contributed to the dynamic reconstruction of his identity in the group. What was striking to us from this analysis was how much work June needed to do in order to negotiate his positionality within the group. This shows how hard it is to reconstruct identities and power dynamics in a group, but at the same time, the possibility of challenging and shifting predominant relationships and structures in the group.

In order to investigate how moment-to-moment framing might connect to students' identity work and cultural shifts in their figured worlds, researchers could leverage concepts from previous studies that have explored marginalized students' participation and learning over time. For example, studies could investigate who mainly *holds the floor* in class discussions and how the floor gets defined and shifts over time through moment-to-moment class interactions, like what Kurth, Anderson and Palincsar (2002) did to unpack the African American girl, Carla's opportunities to participate in group work. "The floor" consists of "someone(s) talking about something(s)" (Kurth, Anderson and Palincsar 2002, p. 292) and is bounded by what participants recognize as "appropriate" or "irrelevant" activities or contributions in their group work. In Ha and Kim's paper, June's contributions were regarded mostly as "inappropriate," but sometimes as "making sense" in the small group work. This indicates that the small group members' moment-to-moment framing sometimes challenged their perceptions of the floor, which could potentially lead to shifts in who gets to talk and gets acknowledged in class activities.

For another example, researchers could examine how student identities get *co-constructed* through moment-to-moment interactions and framings in classrooms. Hand (2010) examined how the teacher and students in a low-track mathematics classroom jointly constructed the students' identities and practices as "resistant" and "oppositional" to school

structures. She focused on how students' epistemological and positional framing was connected to the co-construction of identities in their figured world over time. Like this, studies can help understand and support marginalized students' participation in collective activities and learning by exploring the connection between students' moment-to-moment framings and the (re)construction of their identities and cultural aspects of their figured worlds in the long-term.

Using framing as a tool to explore the dynamics of students' epistemological and positional perceptions

Ha and Kim's paper also emphasizes the intertwined nature of students' perceptions of "what is going on here?" with respect to knowledge and learning (epistemological framing) and their perceptions of roles and power relations in classroom interactions (positional framing). Based on Ha and Kim's and other studies on framing, we highlight the claim that it is effective to focus on both kinds of student framing and how they co-evolve over time.

Carla van de Sande and James Greeno (2012) connected two bodies of literature that focused on epistemological framing (e.g., Hammer, Elby, Scherr and Redish 2005) and positioning (e.g., Harré and van Langenhove 1999—which van de Sande and Greeno named as positional framing by focusing on commonalities between positioning and certain aspects of framing—and argued that focusing on both kinds of framing is integral in understanding students' participation in learning activities and that the two kinds of framing are essentially related to each other. Based on these arguments, a few studies (e.g., Shim and Kim 2018) have explored the dynamics of student interactions in learning activities using these concepts and found that the concepts are inherently interconnected and are useful in explaining shifts in student participation and interactions.

Ha and Kim's study featured how students' perceptions of the epistemic practice of scientific argumentation (epistemological framing of argumentation) and the marginalized student, June (positional framing of June) influenced each other and co-evolved, as the students accumulated experiences of interacting with one another in argumentation activities. For example, when the students discussed the meaning of "justification" in an episode, June's contribution got acknowledged, unlike usual situations, in the process of co-constructing what justification meant in scientific argumentation. In other words, June's contribution (and possibly June) got repositioned in the group dynamics, as the students co-constructed their understanding and expectations about scientific argumentation in the interaction.

Like shown in this episode, Ha and Kim's unique contribution is that they presented how the focus on the interconnectedness of epistemological and positional framing could help understand and support marginalized students' participation in epistemic practices. This adds to the literature about supporting students' engagement in scientific practices, such as argumentation (e.g., Driver, Newton and Osborne 2000) and modeling (e.g., Windschitl, Thompson and Braaten 2008), by suggesting framing as a useful tool to attend to the dynamics of power relations and social aspects that are inherent in and influence students' epistemic work. This attention is important because students "becoming scientific" includes not only them "doing science" but also how they view themselves and get recognized by others in the presence of cultural, historical, and social structures in the science classroom (Carlone, Scott and Lowder 2014).

Conclusion and implications

We presented three arguments about how to expand the interpretive functions of framing for understanding and supporting marginalized students' participation in class activities, based on findings and insights from Ha and Kim's paper and the literature. First, we argued that it is important and useful to examine how students' moment-to-moment framing of activities, themselves, and others interact and co-evolve with collective frames in the classroom community in the long-term. Second, we argued that framing is a useful tool to explore how students construct their identities in figured worlds that reflect expectations in broader societies. A framing analysis not only reveals students' current identities or figured worlds but also shows how they (re)construct their identities and figured worlds as they interact with one another. Finally, we highlighted the previous studies' claim that it is effective to focus on both epistemological and positional framing of students and how those co-evolve over time in exploring the dynamics of student participation and interactions in collective epistemic activities.

Future studies could build on these arguments to use the concept of framing to contribute to fostering students' equitable interactions and productive learning. The focus on the connection between students' moment-to-moment framing and the long-term shifts in classroom communities can help seek for more sustainable and systemic ways to support marginalized students' productive learning over time, by expanding the scope of work beyond looking for one-off chances or snapshots of productive classroom interactions. Researchers and practitioners could examine what kinds of interactions and supports lead to repeated shifts in students' moment-to-moment framing, and consequently, shifts in classroom norms and cultures that support marginalized students' productive learning. Also, by focusing on students' identity work and figured worlds through the lens of framing, researchers and practitioners could deepen their understandings of how marginalized students' identities get constructed and negotiated dynamically through moment-to-moment interactions over time, in ways that could promote or disrupt students' equitable participation; in consideration of cultural dynamics present in classroom communities and broader societies.

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