EQUITABLE MATH INSTRUCTION VISION

VISUALIZING A VISION FOR HIGH-QUALITY, EQUITABLE MATH INSTRUCTION

Katherine Baker
Elon University
Catherine S. Schwartz
East Carolina University
Ashley N. Whitehead
Appalachian State University
Olufunke Adefope
College of Education, East Carolina University

ABSTRACT

In this article, we overview a professional learning task that involves drawing one's vision for high-quality, equitable mathematics instruction (HQEMI). The task is part of the ongoing work of a statewide research practice partnership that supports a shared vision of mathematics across the state K–12 system. Our work of HQEMI is rooted in the development of Munter's (2014) four dimensions for visions of high-quality mathematics instruction (VHQMI): the role of the teacher, classroom discourse, mathematical tasks, and student engagement. The first three dimensions are particularly useful in the work of the drawing task. In this article, we share an overview of the drawing task, its implementation with educators, and sample drawings, detailing how personal drawings were made visible across participants and the conversations resulting from viewing and reflecting on one another's drawings. These conversations helped surface disparities in notions of ideal mathematics instruction and provided space for negotiation of shared meaning. We provide themes and overarching considerations from these conversations to highlight discussions that might be elicited through this task in future iterations. Finally, we provide recommendations for implementing the task and consider how the task might be adapted for others' contexts to support professional learning about and development of a shared vision for mathematics.

Keywords: vision, drawing, equity, codesign, VHQMI, HQEMI.

Take a moment, close your eyes, and picture mathematics instruction in an ideal elementary classroom. Now reflect: What components did your vision include? What were the students and the teacher doing? What did the classroom discourse look like? What were the mathematical tasks in which students engaged? If you posed these same questions to a colleague, do you think they would answer similarly? Draw a quick sketch of this mathematics classroom on a piece of paper.

A teacher's vision for instruction can be viewed as what they consider "ideal" (Hammerness, 2001); therefore, a vision is seen as aspirational rather than necessarily descriptive of current practice. We are members of a research practice partnership called the North Carolina Collaborative for Mathematics Learning (NC2ML), which supports a shared vision for high-quality, equitable mathematics instruction (HQEMI) across the state. As members of the partnership and as part of the aligned research project called the VISIONS Project, we care deeply about what is envisioned from the opening prompt. In this article, we unpack briefly why developing a shared vision of HQEMI is important and describe our project's goals, structure, and context. We then share a professional learning task we use with mathematics teachers and leaders around making visions explicit and creating shared visions. Asking participants to draw their visions of HQEMI has served as a tool for productive conversations and for negotiating our shared vision of HQEMI across constituents, representing a wide range of those identifying as educators, including but not limited to classroom teachers, math specialists, math teacher educators, families, and administrators. Lastly, we provide details of the drawing task implementation and discuss how it might be facilitated in other contexts.

VISIONS OF HQEMI

Vision of HQEMI is a discourse by which educators talk about how they view ideal mathematics instruction. By making their visions explicit, teachers can understand how far or how closely aligned they are with HQEMI and hopefully improve their efforts related to teaching and learning (Hammerness, 2001). As such, instructional visions act as both filters and reflective tools as teachers work to grow in their practice (Munter & Correnti, 2017).

Unpacking Vision

Several terms and considerations are used when discussing vision in mathematics education. Goodwin (1994) first termed "professional vision" to characterize the unique ways those in a professional group look at phenomena of interest to them.

Teaching professional vision (Sherin et al., 2008) would then refer to teachers' concern about the phenomena of classroom interaction as well as their ability to notice and interpret significant interactions in a classroom (Sherin, 2001, 2007). Our project built on Hammerness's (2001) idea of instructional vision as an ideal image of practice and, more specifically, on Munter's (2014) manner of detailing the sophistication of teachers' articulation of their or others' mathematics classroom practices. As part of our work with the VISIONS Project, we examine and unpack individual and collective visions for mathematics instruction, with the understanding that individuals' visions must be surfaced to shape and negotiate a shared vision.

Unpacking High-Quality Mathematics Instruction

High-quality mathematics instruction is rooted in the reform-based mathematics movement, informed by the National Research Council's (2001) intertwined strands of mathematical proficiency that include adaptive reasoning, strategic competence, conceptual understanding, productive disposition, and procedural fluency. HQEMI is also informed by the National Council of Teachers of Mathematics's (2014) *Principles to Actions*. In *Principles to Actions*, the council outlined effective mathematics teaching practices, which included establishing mathematics goals to focus learning, implementing tasks that promote reasoning and problem solving, facilitating meaningful mathematical discourse, and building procedural fluency from conceptual understanding. To explore instructional visions of high-quality mathematics instruction, Munter (2014) conducted interviews with teachers, principals, and mathematics coaches, focusing on how they described and characterized high-quality instruction. His research interactions led to the development of four main dimensions and rubrics to classify increasingly sophisticated levels of visions of high-quality mathematics instruction (VHQMI; Munter, 2014). These four dimensions include: the role of the teacher, classroom discourse, mathematical tasks, and student engagement. The first three dimensions are particularly useful in thinking about ideal mathematics teaching and are overviewed next.

The *role of the teacher* dimension examines if and how teachers coparticipate in the learning of mathematics with students by establishing a learning environment that gives authority to students to problematize and make sense of mathematics (Lampert, 1990). Regarding *classroom discourse,* of importance is establishing a discourse community (Hufferd-Ackles et al., 2004; Lampert, 1990) in which whole-class discussion elicits and follows student contributions, and student-to-student talk is used to support mathematical sensemaking around concepts and content. The dimension of *mathematical tasks* draws upon Hiebert et al. (1997) and Smith and Stein's (1998) work around the classification and rubrics for four categories of high-quality mathematical tasks, with the highest categorization being tasks that require complex thinking and exploration of mathematics.

Equitable Mathematics Teaching

Since Munter's (2014) introduction of the VHQMI rubrics, equitable mathematics teaching has emerged as a pressing priority for the mathematics education field and, subsequently, for our project. As a result, the "E" became part of our work, meaning HQ***E***MI was used in our thinking about vision for the project. We grounded our project's work in past research that has framed and characterized equitable mathematics teaching practices (Aguirre et al., 2013; Bartell et al., 2017; Gutiérrez, 2009; Hand, 2012; Nasir et al., 2014). In the project, we pulled upon these characterizations and a National Council of Teachers of Mathematics research brief (Chao et al., 2014) to recognize equitable mathematics instruction as teaching that (a) accounts for oppressive norms perpetuated or maintained by mathematics teaching and then (b) actively seeks to work against those norms, so each student can participate, and belong, in the mathematics space (Bishop, 2012; Gutiérrez, 2013; Martin et al., 2010; Nasir & Hand, 2008).

To better understand this instruction in action, we examined the vision of equitable mathematics teaching. Recently, Haines et al. (2023) identified equity-specific aspects of vision as missing from current research on instructional vision in mathematics education. Research into trajectories of the ways teachers' instructional vision is characterized related to equity is still emerging (Haines et al., 2023; Wilson et al., 2024), and we hope these trajectories will eventually be informed by the work of the VISIONS Project. In the meantime, raising equity as a conversation starter around the drawing task in this research surfaced participants' current notions and helped us connect to other existing conceptions of equity-based practice. Shared vision is essential for professional development and collaborations to be effective in schools (Birkeland & Feiman-Nemser, 2012; Cobb et al., 2020; Fulton et al., 2010) and for the implementation of new programs or policies (Gamoran et al., 2003). Our research practice partnership (RPP; Coburn et al., 2013), NC2ML, has been working for statewide systemic change in North Carolina since 2016, with an explicit focus in the last 3 years on promoting a shared vision of high-quality, equitable instruction among administrators, teachers, and other constituents. We are committed to the defining characteristics of RPPs, which are long-term collaborations among members from distinct communities who work toward education improvement (Farrell et al., 2021; Penuel et al., 2015).

THE WHO, HOW, AND WHY OF NC2ML AND THE VISIONS PROJECT

The VISIONS Project is part of a wider NC2ML RPP (Coburn et al., 2013) formed in 2016 to build infrastructures (e.g., white pages and research briefs, social media groups, professional learning opportunities, networks, connections across various statewide professional organizations) and create coherence across a state educational system as newly revised statewide mathematics standards were adopted. Over 300 district and state leaders, teachers, mathematicians, and mathematics teachers from all regions of the state engaged in design-based implementation research (Fishman et al., 2013) to codesign resources iteratively for mathematics standards implementation (see Table 1 for overview of roles and involvement in VISIONS Project).

Table 1
VISIONS Project Membership Description

Team composition descriptions	K–5 team (24 members)	6–8 team (26 members)	9–12 team (24 members)
Project leaders	Two university researchers Responsibilities: Overarching facilitators of project and its professional learning experiences, lead distribution of codesign materials to promote consistency, research principal investigators	Two university researchers One doctoral student	Two university researchers One doctoral student
Steering committee members	Two district leaders One university researcher Responsibilities: Facilitators of the codesign team professional learning experiences and meetings, cohesion and clarity across all codesigned resources, direct support to project leaders	One district leader One school principal One university researcher One classroom teacher/researcher	Three district leaders
Codesign team	Two project leaders Three steering committee members Four classroom teachers Five district leaders Three district coaches Three school coaches Four higher education faculty Responsibilities: Lead and support the development of codesigned resources and experiences to support HQEMI across state, distribution of project resources through local contexts and networks	Three project leaders Four steering committee members Three classroom teachers Five district leaders Three district coaches Three school coaches Three district math and science coordinator/specialists Two higher education researchers	Three project leaders Three steering committee members Six classroom teachers Five district leaders One district coach One school coach Four higher education researchers One testing coordinator
District type	Totals: 44% urban, 22% suburban, 33% rural Region diversity: Evenly spread Four educators from minoritized populations	Totals: 30% urban, 25% suburban, 40% rural, 5% private Region diversity: Missing three regions Three educators from minoritized populations	Totals: 50% urban, 20% suburban, 30% rural Region diversity: f our from two regions, the rest equally distributed Three educators from minoritized populations

Note. The K–5 team was the team of focus for this article's math exploration.

In 2021, the RPP began the Visions Project, a 4-year cycle in which a team of approximately 80 codesigners from across the state used a design process (Stanford d.school, 2018) to investigate how we can elicit and shape a shared K–12 vision for HQEMI across North Carolina. North Carolina is a geographically varied state with three regions that often influence the organization of districts and access to educator professional learning. Although 78 of the 100 counties are considered rural, they serve only 34% of students in this state (Dollar, 2024). As of Dollar's (2024) reporting, the teaching population was 76% White compared to 46% of students. The VISIONS Project codesigners were selected through a deidentified application process and represent math teachers; math teacher leaders (i.e., at school, district, and state agency levels); and university faculty from the three geographic regions and rural, suburban, and urban schools. The VISIONS Project remains ongoing at time of publication.

Throughout the collaborative's projects, we assumed that developing a shared vision of HQEMI is foundational to systemic coherence and, further, that codesigning resources and learning experiences can surface differences in and support the negotiation of shared meanings for HQEMI among constituents. Part of an RPP involves taking on a shared problem of practice (Cobb et al., 2020; Miller & Pasley, 2012; Munter et al., 2020; Munter & Wilhelm, 2020; Van den Akker & Nieveen, 2021). Because the codesign team operates at a statewide level, the project began with open invitations to districts through state organizations and networks to engage in surveys, interviews, and in-person focus groups held in each of the eight regional educational alliances of the state. Participants were asked to describe their vision of HQEMI and to identify challenges in their educational communities in enacting those visions. The grade-band teams (i.e., K–5, 6–8, and 9–12) used these data to select a particular problem of practice, with the overarching focus on codesigning K–12 supports and infrastructure (e.g., resources, networks, development opportunities) toward a coherent, shared vision of HQEMI. For 3 years, each grade-band codesign team met yearly in a 3-day summer institute and monthly via Zoom to decide how they wanted to uniquely codesign resources for developing a shared vision across the state to promote systemic coherence. We were involved in the K–5 codesign team with the following roles, respectively: steering committee member, project lead, mathematics teacher educator in the codesign team, research associate.

In planning for and designing the first 3-day summer institute, the K–5 project lead and steering committee acknowledged that even with an expressed shared vision and desire for enacting HQEMI, this might look and feel different for each person, depending upon their situational contexts and lived experiences. During the institute, we engaged in activities adapted from the Stanford University design school (d.school, 2018) and focused on creating learning experiences for the codesigners who embodied the instructional aspects of discourse community and high-cognitive demand tasks. We aimed to spark discussion about the nuances of problem solving and fluency in relation to HQEMI in elementary settings, especially because fluency can be interpreted controversially, and discussions about the role of fluency were beginning to happen in the statewide political landscape. As project leaders, we relied on the National Research Council's (2001) definition of *fluency* as "carrying out procedures flexibly, accurately, efficiently, and appropriately" (p. 5). Grounded in what we knew about vision and the importance of engaging in shared vision, especially VHQMI, we dedicated time to elicit the participants' visions in the room. We wanted to extend beyond discussions of vision to employ other senses, including considering what a vision of HQEMI may look like, sound like, and feel like in elementary settings. Just talking about our visions of HQEMI would not be enough to spark the robust discussions needed to unpack and align vision, particularly because individuals assign different meanings to common phrases like "hands on" or "collaborative;" we needed to visualize our visions. To accomplish this task, we used a professional learning task we refer to as "Visualizing Your Vision," which involved drawing, displaying, viewing, and discussing our visions of HQEMI. In the next section, we describe (a) the enactment of this task in our 3-day summer meeting, (b) discuss how this task has since been used in multiple settings statewide, and (c) outline how it might be implemented in other contexts.

Visualizing a Vision: Drawing HQEMI

In this section, we describe the different aspects of our professional learning experiences for and with educators. We provide an overview of the value of using drawings with educators and spotlight past research that discusses the process. Then, we discuss our own process for having participants produce drawings of HQEMI. We transition to how we surfaced opportunities to share and reflect on drawings through a gallery walk, which provided opportunities for noticing and wondering. Finally, we conclude by discussing two ways we supported participants to notice disparities in their visions.

Previous research has examined the importance of drawings as pedagogical and research tools for exposing individuals' perceptions, thoughts, and attitudes toward various subject areas (Finson, 2002; McKay & Kendrick, 2001). Specific to mathematics, Burton (2012) and, more recently, Ruef (2020), used drawings with prospective teachers during university coursework to better understand the prospective teachers' connections to and relationships with mathematics. Both researchers used pre- and post-drawings for comparison points across a semester to analyze prospective teachers' changing perceptions and mindsets toward mathematics. Both researchers also used the drawing experience to further pedagogy and research to inform future iterations of their courses and consider how the education field might best prepare prospective teachers. In Ruef's study, the prospective teachers were asked to draw an optimized vision of teaching. Although what we explain next also considers vision in the context of our codesign team's drawings, we expanded on past research by enacting this task with various educational constituents across various roles in mathematics education to use the pictures to negotiate shared vision. Our package of the drawing activity, with tools for surfacing conversations about the drawings as a cohesive professional learning task, makes our work a contribution to various fields in education, specifically the fields of mathematics education and professional development.

The professional learning task began with providing the codesign members independent thinking time to visualize their vision of HQEMI in a K–5 context. Each codesign member was asked to draw what HQEMI would look like in the elementary setting and was encouraged to be open to the drawing process. The K–5 codesign team leaders modeled openness and willingness by also drawing their visions.

The full prompt used in our summer institute can be seen in Figures 1 and 2. Although the prompt focused on "making sense of operations," this exploration and prompt can be opened up or narrowed depending on the specific context needs. In Figure 1, participants were focused in general on "what ought to be" as a way of pulling attention to images of "ideal" practice rather than current practices they saw or experienced in their contexts. After a short, silent time of reflection, Figure 2 was shown to spark ideas for drawing and to support participants in including items in their drawings that fit with Munter's (2014) dimensions of the role of teacher, discourse, and task. Figure 2 remained posted for the duration of the drawing time, as the first five bullet points in Figure 2 could be a starting point for any vision drawing task.

Figure 1
Drawing Prompt for the "Visualizing Your Vision" Task

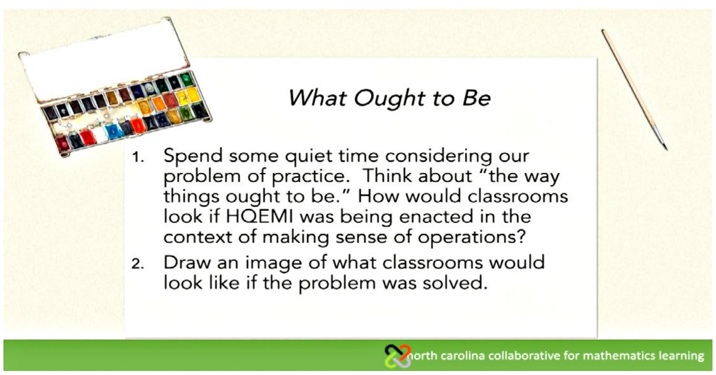
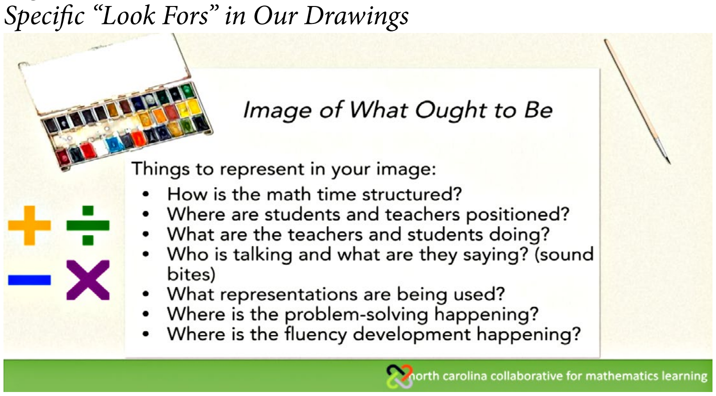


Figure 2
Specific "Look Fors" in Our Drawings



To begin the drawing process, codesign members sat in quiet reflection and sketched and drew. Some asked for another sheet of paper and restarted, whereas some quietly commented about their lack of drawing skills. Codesign members were encouraged and reminded to remain open to the process and interpret drawings flexibly and creatively based on their assets. This reminder to stay asset-focused and open to the process was another unifying reminder of how we hope to establish mathematics classrooms as places of flourishing (Su, 2020).

In Figure 2, the last two bullet points, asking, "Where is problem solving happening?" and "Where is the fluency development happening?" were included for the group because they aimed to come to a shared understanding of these terms among codesigners. During the summer institute, it became clear the codesigners used the terms problem solving and fluency with different interpretations and different mathematical definitions or experiences attached; for example, one person might have surfaced a more rote, memorization view of fluency, whereas another may have looked at fluency as being more holistically intertwined with conceptual understanding of algorithmic processes.

Similarly, although codesigners used the term problem solving in their discussions of HQEMI, how it was being used and what it represented in a mathematics space was distinctly different. As a response, steering committee members decided to focus on these terms as part of the drawings. After the drawings were completed for the initial vision of HQEMI, codesigners were then asked to label their drawings with "PS" or "F" for where they showed problem solving (PS) and fluency (F) development. Fine tuning drawings of visions to specific mathematics content or processes (e.g., problem solving, fluency) may not be needed or found useful amid all iterations of this professional learning task. The prompts might remain more open ended and focused on the initial five bullet points of Figure 2 to best match the context, purpose, and readiness for exploring vision.

Using Drawings to Unpack and Negotiate Shared Vision: Our Process

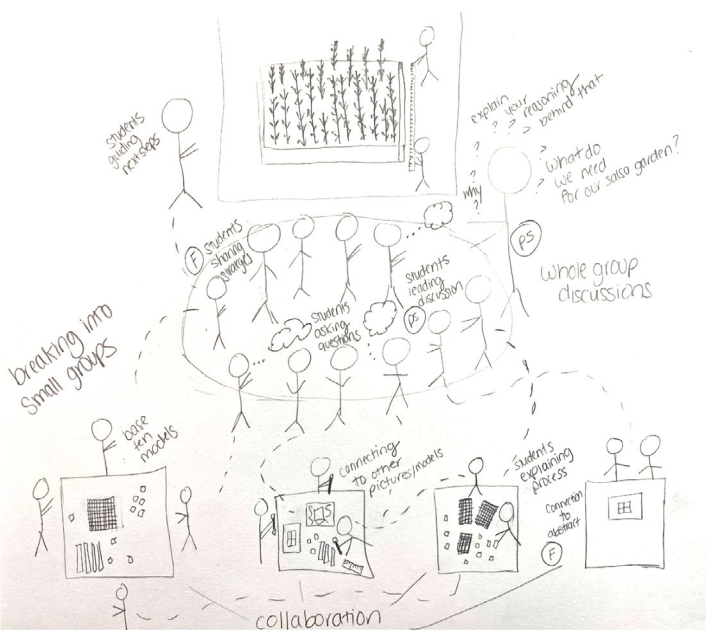
Once drawings were completed, the professional learning task transitioned from revealing individual visions to revealing and reconciling visions collectively. The drawings could now serve to spark conversation about differences in visions of HQEMI and different interpretations of our terms of focus: problem solving and fluency. The drawings were hung around the room as a gallery walk, a method of displaying images around a space to be viewed and examined by all participants. Initially, the gallery walk time served as an opportunity to absorb what colleagues had created and simply notice. Codesigners noticed some members drew specific classroom moments in time, some drew maps across time and experiences, some focused on the teacher and students, and some focused on a learning experience or a specific mathematics task.

We also noticed the drawings could help us see, hear, and feel HQEMI in ways that discussion alone could not; for example, rather than an individual saying, "Classroom discussions are important," they drew this sentiment in Figure 3 (Drawing 1) using thought bubbles with actual snippets of an imagined conversation. Further, in the first two thought bubbles in the right-hand corner, students interact with each other, not just the teacher.

Figure 3
Drawing Example 1

Conversely, in Figure 4 (Drawing 2), although discourse was clearly happening, the codesigner more generally described what students said as "students asking questions" or "students sharing strategies." However, although Drawing 2's discussion aspect may not be as robust as in Drawing 1, more was gleaned about the drawer's notions of the tasks on which students work in ideal classrooms. Students were working to determine what they needed in a "salsa garden"—a garden that grows ingredients typically in a salsa recipe (e.g., tomatoes, peppers, herbs)—and collaborative small-group work showed multiple tools, representations, and strategies that could be discussed.

Figure 4
Drawing Example 2



Surfacing and Negotiating Disparities in Vision
Drawing images of ideal practice allowed codesign team members to consider concrete images and "sound bites" together, allowing them to look across drawings for commonalities and differences in these concrete moments. Before the corresponding gallery walk, team members expressed concern about the different interpretations in the room surrounding problem solving and fluency, as it was not clear how the differences would impact trying to design for shared visions of HQEMI statewide as a team. At the end of one of the institute days, after the drawings had been created and labeled but before the gallery walk and conversations, one team member wrote in her designer's notebook (i.e., a personal reflection tool used throughout meetings for both prompted and free writing), "I felt that my definition of 'fluency' very much differed from some of the group members. I was especially taken aback by a comment that fluency comes before problem solving."

After the initial gallery walk and opening conversation around general noticing and wondering about what might be recurring or what might be missing from the drawings, viewing became more directed toward the labels of fluency and problem solving. This directed viewing lens led to deep discussions about the process of finding and labeling fluency and problem solving in our drawings of elementary classrooms and sometimes the difficulty of separating those aspects. Figures 5 and 6 (Drawings 3 and 4) emphasized this complexity, as Figure 5 was helpful in showing comparisons between problem solving and fluency as different components of math teaching and learning, versus in Figure 6 where the illustrator could not always separate the problem solving and fluency and labeled points in the drawing as both "PS/F." These discussions led to regrounding ourselves in definitions from the interwoven strands of mathematics proficiency (National Research Council, 2001); work from the National Council of Teachers of Mathematics (2014); and state standards to guide what we meant about the conceptual understanding of whole-number operations, including problem solving and fluency.

Figure 5
Drawing Example 3

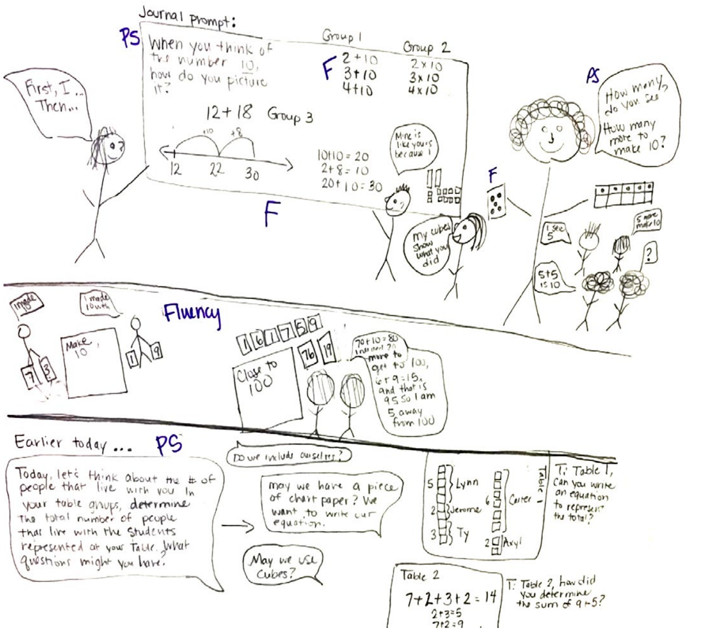
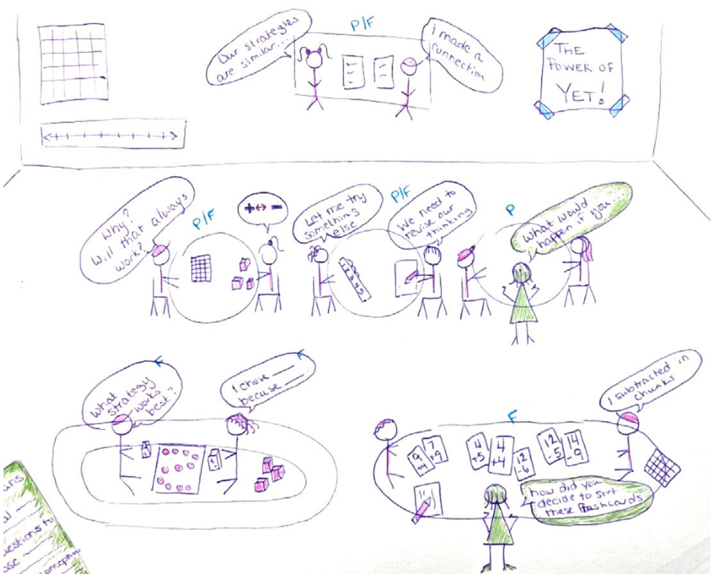


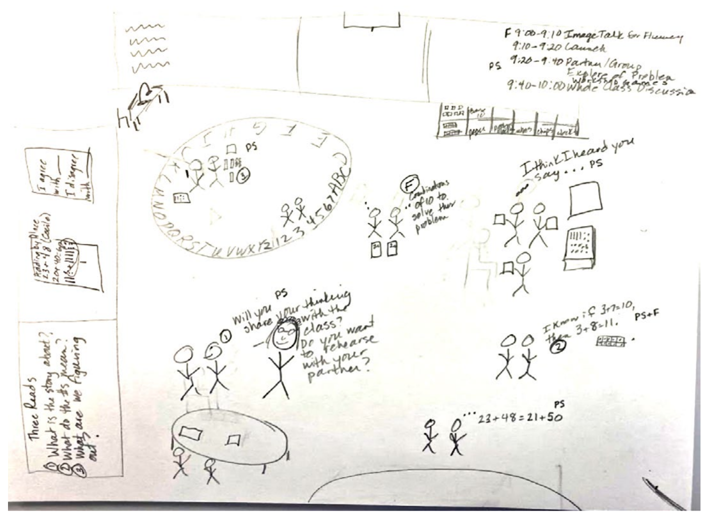
Figure 6
Drawing Example 4



In our instance, the drawings of our visions of HQEMI served as a springboard by providing concrete examples to use in conversations about aligning our visions of fluency and problem solving. For example, one codesign member mentioned, "My energy increased as we did the gallery walk and saw and discussed others' drawings. I saw things I'd like to add to mine, and it was neat to see how different people focused on different aspects." Through focused discussion, participants discovered our visions of problem solving and fluency were more shared than we first thought, but we used language and terminology differently. Another codesign member commented, "We came together to agree on common definitions for language, and it was affirming to see so many similarities in our ideal HQEMI classrooms."

Although visions or language used around HQEMI can be similar in a group with role-alike similarities, it is also likely these visions are disparate. Although discovering such differences could be uncomfortable and will likely be messy, surfacing rather than avoiding these discrepancies, or perceived discrepancies, facilitates opportunities to negotiate meaning collectively. For example, later in our work, after some professional readings and discussions surrounding equity, participants were asked to revisit their drawings in individual interviews to identify places in their drawings they thought showed equitable mathematics teaching practices. Some participants attended to the positioning of students and lifting of student's voice as in Figure 7 (Drawing 5), where the teacher not only invites a student to share their thinking but also scaffolds time for rehearsal before sharing—see toward bottom left, "Will you share your thinking with the class? Do you want to rehearse with your partner?" Many codesigners commented on aspects of differentiation being part of equitable instruction.

Figure 7
Drawing Example 5



In Figure 8 (Drawing 6), different number choices are listed in the task on the board, and students are collaborating with a selection of representations and strategies. Fewer pictures presented explicit attention to students of color or other marginalized populations, as in Figure 9 (Drawing 7). Noticing these differences across pictures opened the door for conversations about broader meanings of equity and equitable teaching practice. When thinking about the "E," or equitable, part of HQEMI, we still have work to do to align our vision. Having participants sort the pictures concerning how they viewed a particular aspect of vision—in this case, equity—can be a way to raise conversation about differences explicitly and to negotiate shared meaning.

Figure 8
Drawing Example 6

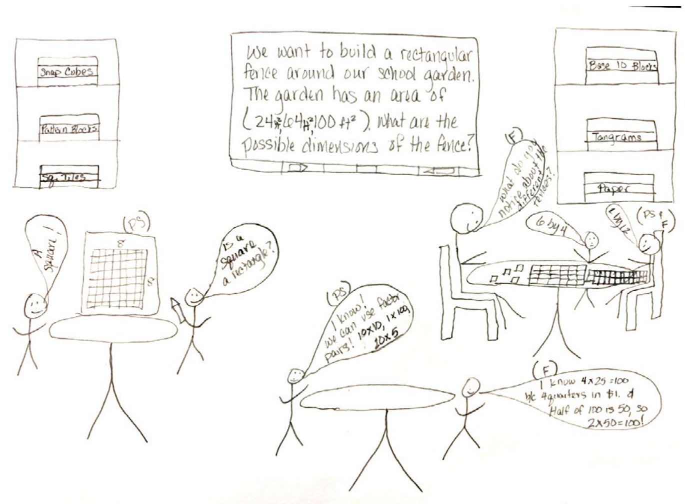
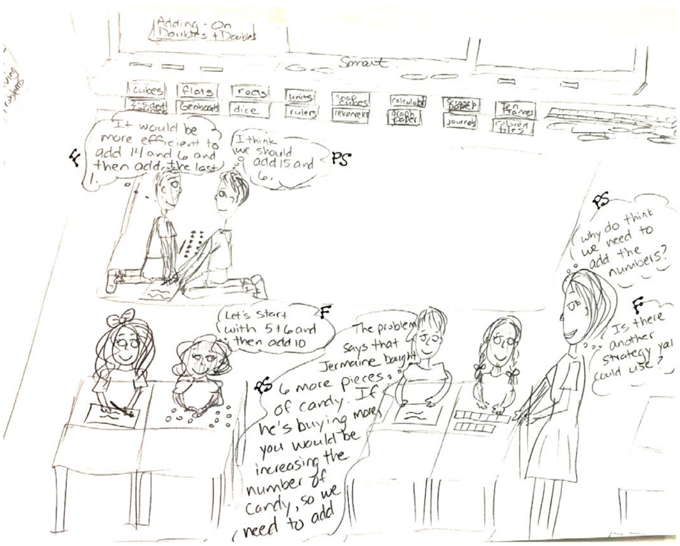


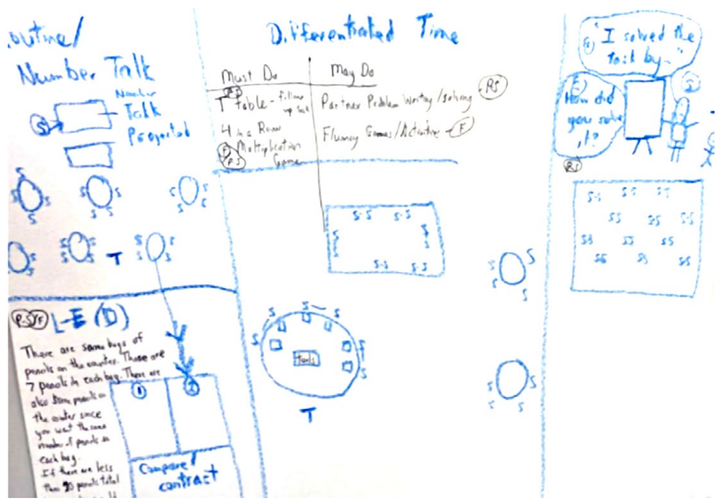
Figure 9
Drawing Example 7



Another strategy to springboard discussion was to center everyone on a single picture rather than doing another gallery walk. An exchange about Figure 10 (Drawing 8) in a small-group meeting later in the year clarified both the illustrator's intent and the group's shared notice of appropriate differentiation:

> *Illustrator: "I see it as differentiated time . . . as equitable because students are sharing their own solutions and commenting on different strategies."*
>
> *Participant: "I saw the Must Do, May Do as somewhat problematic as if leading into a directed "I do, we do, you do" in the small table group with the teacher."*
>
> *Illustrator: "Ohhh, no, that's not how I intended it. The follow-up task would also be open with multiple tools available and students choosing their own strategies."*

Figure 10
Drawing Example 8



As facilitators and as codesign members, we returned to the drawing task and the drawings themselves repeatedly in meetings because we found the drawings sparked conversations or turning points in the project better than our words alone. Codesigners referred to the process of drawing and the feelings evoked from drawing. They also re-anchored themselves in the drawings to support thinking through conceptualizations of HQEMI whenever words alone could not express our full thoughts.

Using Drawings to Unpack and Negotiate Shared Vision in Other Contexts

The flexibility of this professional learning task is powerful for work in different settings with varying purposes, as shown by our experience in using the task to focus on a vision of HQEMI, to narrowing focus on misalignment in term use (e.g., fluency), to then revisiting the same pictures to discuss equitable mathematics teaching. One codesign member wrote in their designer's notebook:

> *I LOVED the drawing activity as I thought a lot could be taken away from that activity. I am NOT a good drawer :-) But I find sketching ideas very powerful and even more powerful, looking at other people's sketches. So much can be said from visual images.*

The codesign team found the task thought provoking and worthwhile enough to include it in the professional learning experiences they designed for statewide audiences, including a statewide mathematics professional development webinar for K–5 educators (i.e., teachers, administrators, and coaches); a 4-day elementary mathematics leadership retreat for district teams composed, again, of teachers, administrators, and coaches; and for various K–12 educators at a conference session during the state's affiliated National Council of Teacher of Mathematics organization. Some team members also used this activity to support vision alignment on a smaller scale in their grade levels or school settings. Figure 11 describes the experience of one district leader who used it to frame discussion during a professional development session with elementary teachers.

Figure 11
District Leader Shares Experience Using the Visualizing a Vision Task

> *This year, I met with my elementary teachers for 3 full days of professional development focusing on instructional math practices. A portion of the professional development focused on our "Vision of Mathematics Instruction." Teachers participated in several activities focused on their instructional visions, but one of my favorite tasks was having them illustrate their ideal math classroom. Each teacher received a blank sheet of white paper and had access to colored pencils, markers, and crayons. The activity was powerful! It allowed teachers to dream and imagine what their math classrooms could look like and sound like. The teachers had to think carefully about their math classrooms, what aspects of instruction were important to them, and how to capture it in a drawing. For example, it made them reflect on: the room arrangement, where the teacher was positioned, how students were interacting with one another, how students were flourishing with mathematics, etc. We often do not ask teachers to do this or give them the time to reflect and dream. Instead, we TELL them what their classrooms should be.*
>
> *As a whole group, we did a gallery walk around the room. We noticed many commonalities in the drawings. This activity helped us to craft a common vision for our elementary mathematics classrooms. Because the activity focused on drawings and images, it allowed us to visually see how our math classrooms should look and sound—not just to talk about it with words but SEE it with images and drawings. It provided us with a common VISION of what we wanted our math classrooms to look like. We reflected on what we did not see as well (e.g., worksheets, rows of students, direct instruction with the teacher at the front of the room).*
>
> *District Elementary Mathematics Curriculum Specialist*

Because our codesign team is composed of several mathematics teacher educators, they also took the drawing task back to their contexts as a learning experience with preservice teachers. One team member had preservice teachers make their drawings at the beginning of the semester and then revise and add to them throughout the semester. Another shared:

> *I asked my preservice teachers to write a "Dear Math" letter at the beginning of the year and then at the end I had them reflect on their letter and draw their vision of a mathematics classroom. Some students felt more comfortable finding free-access photos online and creating a collage of their vision rather than an actual drawing. This representation still allowed me to understand their vision, especially when paired with their reflection. Overall, it was so interesting to see many of the things we had talked about during the semester (and within the collaborative) coming out in their drawings. I wish I had asked them to do a predrawing, and I might even do that next semester instead of the paper.*

Given the collaborative aims to design resources to promote a shared vision of HQEMI across the state, we have been excited about the conversations this task has sparked across role groups, from future teachers to current educators and leaders.

Suggestions for Implementation
The professional learning task of drawing one's vision to surface vision alignments and misalignments can be used on a small scale (e.g., coteachers, grade-level teams) or large scale (e.g., school sites, district professional developments). When considering the use of drawing visions with a team of educators, several key suggestions from our experience may help guide others' implementations. First, it may not be appropriate to start a team of educators on drawing their visions of HQEMI depending on the group size and group trust that has been established. A more appropriate starting point might be to focus on two of the images provided in Appendix A and begin a discussion with some prompts we used in our experience, like the "Look fors" in Figure 2. This approach would help to compare the images and also start to reconcile personal visions about HQEMI; for example, a team might consider the labels of PS (problem solving) and F (fluency) development in Figures 6 and 7 and reflect on how these labels resonate with teammates' own meanings for the terms. Do the labels align with personal visions for how problem solving and fluency are enacted in a classroom? What questions could be asked of the illustrators?

Another suggestion involves attending to a particular dimension of Munter's (2014) rubric or a facet of an equity framework like Gutiérrez's (2009) four dimensions of equity (i.e., power, access, achievement, identity) to examine one or two of the drawings and subsequently hold fruitful discussions. A sample prompt might be, "What might Drawings X and X tell about the view of the role of the teacher in [our] group?" or "What evidence is there in the drawing(s) that students' voices are taken up?" or "How might this set of drawings be sorted using the role of the teacher as the lens?"

Another suggestion is to use the Thinking Organizer introduced in Figure 12 to look across Drawings 1–8 (see Figures 3–10) throughout this article. In Appendix A, Drawings 3–10 are grouped together to review them side by side as a possible modality for comparison and contrast. We encourage the use of Figure 12 to organize individual thoughts about the different drawings before discussion. After individual reflection, teams can discuss these questions collaboratively: What do you notice about the role of the teacher in these drawings? What do you notice about the role of the students? What do you notice about the pedagogical tools being employed? What might each person's vision encompass, and what might it leave out?

Figure 12

Thinking Organizer for Examining Drawings 1–8

Figure	What do you notice and wonder about . . .			
	the role of the teacher?	the discourse used?	the types of tasks?	other?
1				
2				
3				
4				
5				
6				
7				
8				

After a team completes examination of all drawings, they may come to the same realization we did—drawing of visions and subsequent discussions around those drawings are useful because drawing forces the vision's concretization in ways that simply asking a person to discuss their notions of ideal instruction does not (Finson, 2002; Ruef, 2020).

Finally, if a team of educators is ready to draw their visions of HQEMI, Figure 13 provides some considerations and ideas to support the planning and implementation of the actual drawing task. We encourage reading over Figure 13 and reflecting on affordances and challenges of implementing this professional learning task in each personalized context. It is also important to remember, just as in our experience, when others are asked to draw, they may feel intimidated or discouraged. We acknowledge drawing could be uncomfortable and acknowledged this point during our real-time experience; however, we also drew alongside codesigners even if it was uncomfortable for us, and we shared drawing was important to our group's learning because it surfaced ideas in ways just having a conversation without the personalized images could not.

Figure 13

Planning Your Implementation of the Drawing Task

When planning an implementation of a Vision Drawing Task:

- Consider: What initial prompts could be used to inspire the drawings? Will focused prompts be added to the initial HQEMI questions? (e.g., examples of problem solving and fluency)
- Draw! Set the expectation that everyone in the space draws, including the facilitators. Share with an open-ended and/or guided gallery walk when everyone is finished.
- Get together and talk about your pictures. What is seen? After sharing, note what was not seen. Why? (be prepared for messiness and discomfort.)
- After general noticings and wonderings, focus the discussion on your particular issues. Some ideas for facilitating a focus area:
    - Ask participants to label drawings in particular ways
    - Pull a single or subset of drawing examples from the group to focus the discussion
    - Have participants determine how they would sort the pictures based on a particular component or idea.
- Consider: How will participants reflect on the discussion? How will they express how their vision was confirmed, expanded, or changed through this experience? This reflection may include individual journaling about their picture or talking in small groups.
- How can the set of pictures be used to support negotiating a shared vision in your community of educators? What steps are needed to work toward coherence? What is the first area of focus and subgoals to move toward shared vision?

Conclusion

In the literal visualization of our visions, each codesign team member took away a self-reflection and a better shared direction of an HQEMI vision with whole-number operations in elementary classrooms. As a group, we reflected on the murkiness and stickiness of creating a shared vision. We gained an appreciation of why we might not have that vision across schools and systems, allowing us to think about what we might do together to get there. This task also allowed us to engage in productive conversations about how we define procedural fluency and problem solving and how our visions of equitable teaching practices vary among constituents. Examining visions of HQEMI is important to have a shared language and focus among constituents. We can use research (Haines et al., 2023; Munter, 2014) to help us attend to the role of teacher, discourse, mathematically rich tasks, and equitable mathematics teaching practices to begin conversations related to visions of HQEMI; for example, are educators working from the same vision in your school? Furthermore, are educators working from the same vision in your district? Without coherence among constituents in the different roles and levels of the system, decisions may be made that contradict, rather than support, the enactment of HQEMI in classrooms.

Although our drawing task is one way to begin this discussion, this paper also shared ways to modify the task to fit a particular team's needs. By engaging in eliciting and negotiating shared visions, despite the initial discomfort the task might bring, constituents can begin to home in on discrepancies in language or vision and work toward alignment. Achieving a shared vision among education constituents is critical to the enactment of HQEMI and, thereby, critical to the mathematics learning and opportunities for K–12 students.

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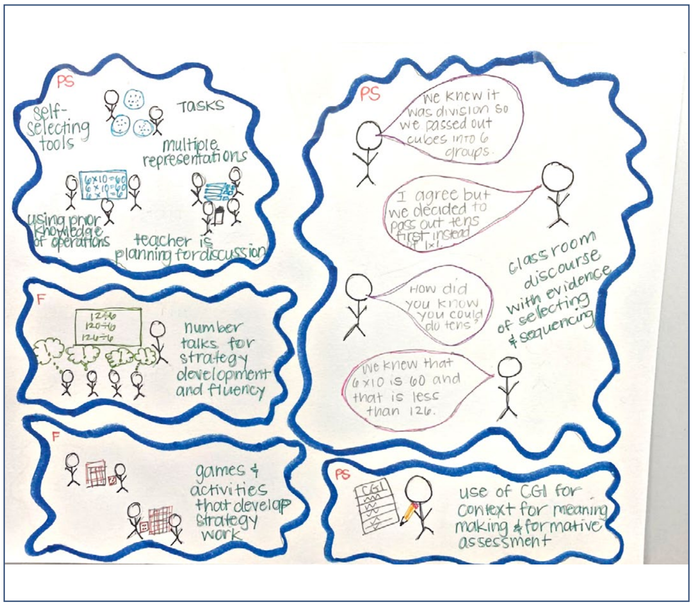
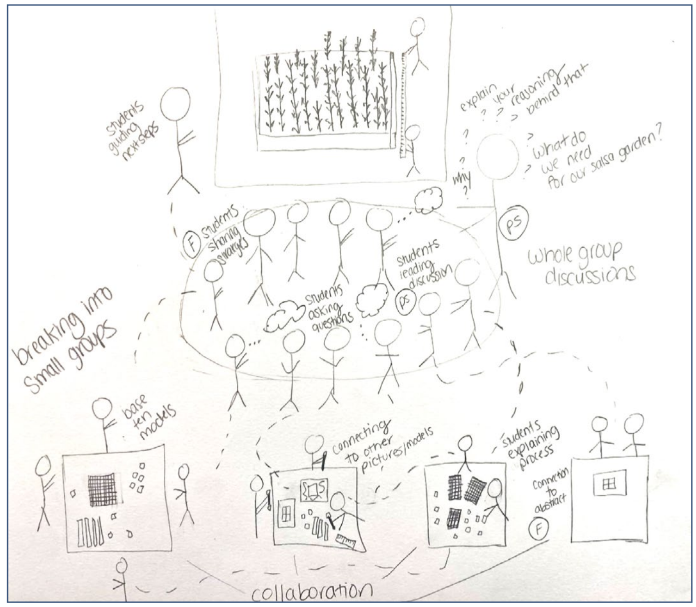
Appendix A

Drawing Examples 1-8 Side by Side

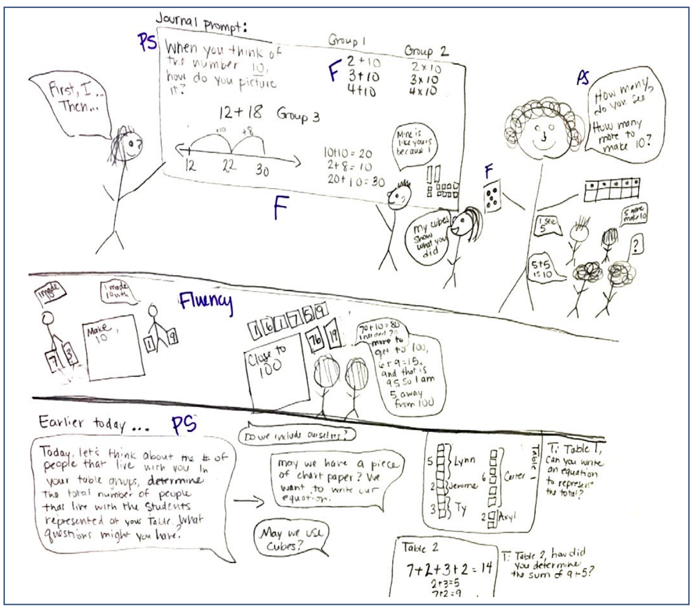
Drawing 1:



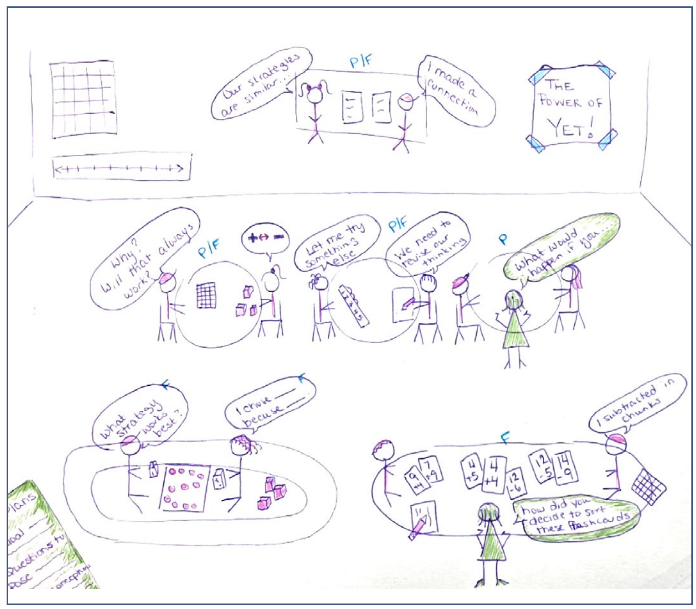
Drawing 2:



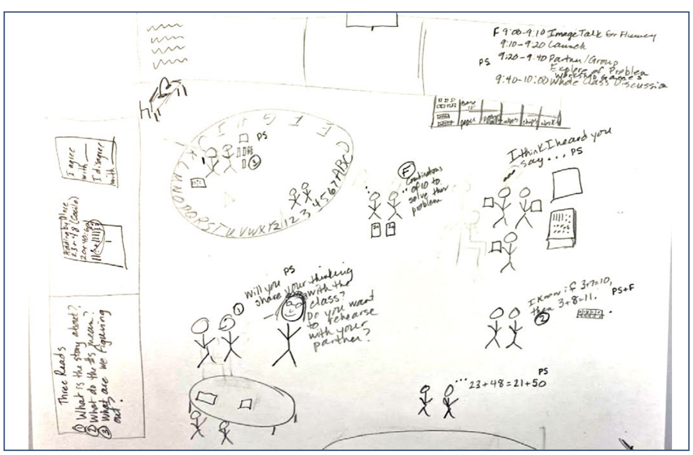
Drawing 3:



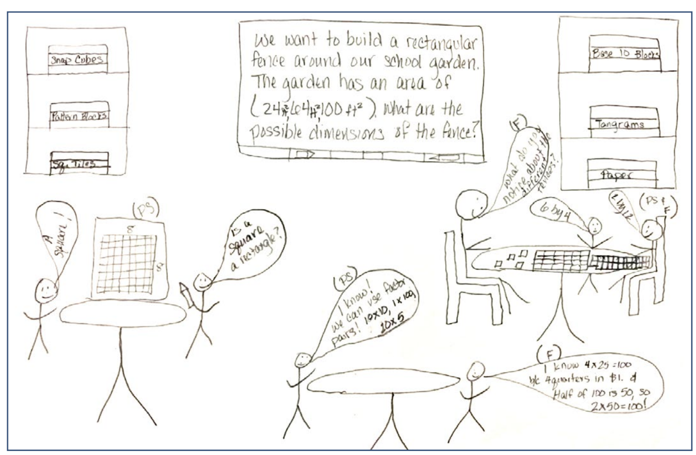
Drawing 4:



Drawing 5:

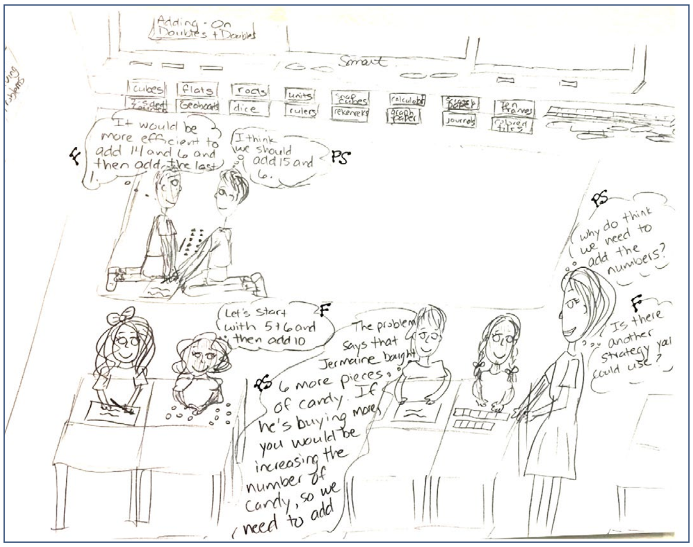


Drawing 6:

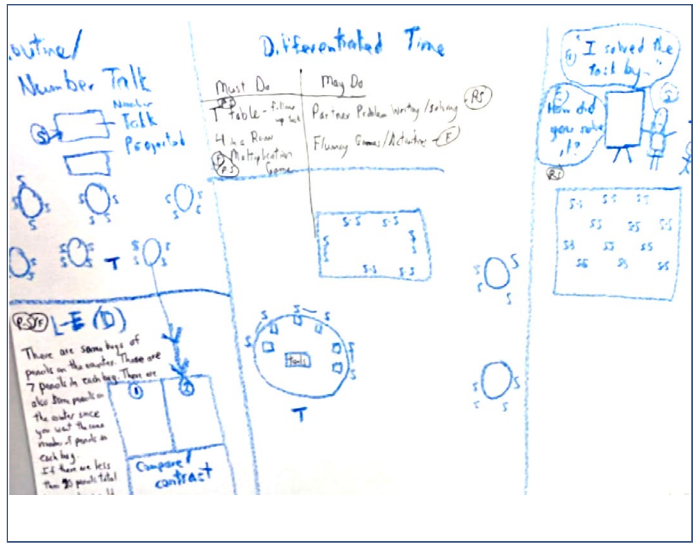


Appendix A
Drawing Examples 1-8 Side by Side cont...

Drawing 7:



Drawing 8:



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