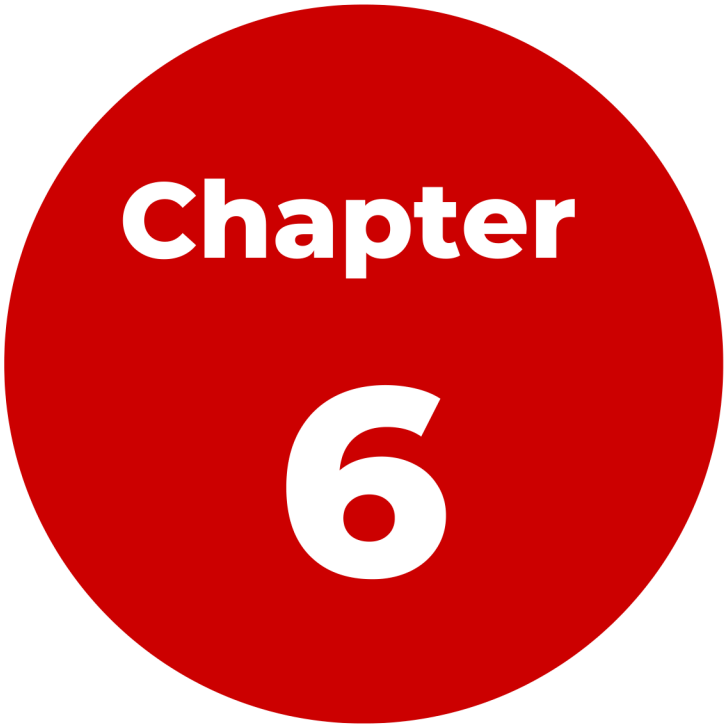


BELONGING AND ENGAGEMENT

ASHLEY MARLOW

Why is belonging in math class important?

Feeling a sense of belonging is a vehicle to engagement. Engagement promotes both learning and empowerment as an expert learner. At All Learners Network (ALN), we believe in opening the doors to all learners, especially those who have historically struggled to learn math in traditional instructional design. Inclusion means ***all*** students are considered when designing instruction and providing access to grade level mathematics. Maslow (1943) posits five sets of goals, or basic needs, which are related to each other and are arranged in a hierarchy of importance. The third level of Maslow's hierarchy of need reflects the importance of belonging- of human interaction where you are seen for your whole self. Maslow suggested that social belonging helps people to experience companionship and acceptance through family, friends, and other relationships (Maslow, 1943). When students see themselves represented and included in their math class, their need for social belonging is met and they are more positioned to engage and learn mathematics.

Katie Novak, a Universal Design for Learning (UDL) expert describes inclusive practice as ensuring all students have the opportunity to learn and be challenged based on their individual needs. Classroom routines and instruction must ensure every child is supported and challenged, regardless of student strengths and areas of need (Novak, 2022). Educators see and promote the variability of our learners and create an environment that allows students to use their understanding of themselves as expert learners to access what they need. Students are much more likely to engage in the learning that is happening when strong pedagogy and UDL give students the feeling of belonging. At ALN, we support teachers in creating, nurturing, and maintaining a cohesive class community where all students feel they are mathematicians who have the skills to communicate and contribute to the mathematical learning community.

When we emphasize our value that all means ***all***, we mean every single child deserves a humanizing math experience. Gholdy Muhammad posits the idea of humanization as teaching in a way that sees the whole human through culturally and historically responsive teaching (2020). For math education to become more humanizing, we need to continue to focus our efforts on the individual needs of students. In education, we often neglect to consider that learning is part of the human condition and instead focus our conversations on standards and test scores and label students with unhelpful terms like "low

kids" and "high kids." Centering our instruction and classroom culture on students' humanity is something both an individual teacher and a school system can control. At ALN, we believe we can do this by using students' understanding of identity, specifically their math identity, along with strong pedagogy and knowledge of student strengths and areas to grow, to plan thoughtful learning opportunities that meet the actual humans in our room where they are.

What does it mean to belong in math class?

Recently, my 5 year old shared a classroom routine from his preschool class. Every morning during the Morning Meeting, they take attendance and sing a song about students who are absent that day. It goes something like "It's sad when we miss two friends today, it's sad when we miss two friends today." They wish those students well and hope to see them the next day. My son shared this with me and then said, "So Mom, if I'm not here, my friends will think about me. They will be sad if I'm not there." This simple daily routine sends the message "***it matters that you are here***" which is an essential component to feeling that you belong. Creating humanizing math experiences starts with considering the conditions for learning to make this happen. Belonging is a condition for learning and the precursor to accessing quality instruction.

On her podcast, *Dare to Lead*, Brené Brown interviewed Aiko Bethea, a Diversity, Equity and Inclusion expert. Brown and Bethea discuss their inclusivity work and the power of empathy and accountability. Their conversation was around leadership among adults, but it reminds us of the power dynamic between teachers and students in the math classroom. As teachers, when we show up for our students with empathy and make instructional choices that support access to grade level content through a Multi-Layered System of Support (MTSS), we send the message that we believe all students can learn. As educators that work with ALN, we believe it is our responsibility to create a space, both physically and emotionally, where students feel they are accepted and belong. When students feel that they belong, their engagement increases and they are more willing to take risks like participate in small group discussions, persevere through challenges, defend their thinking, reason through the thinking of others and make connections (Oyserman et al., 2006).

What does belonging require?

Katie Novak (2022) refers to an image that is widely used in educational settings. This image shows a few spectators (of varying heights) watching a baseball game with a fence blocking the view of the game. In the first image of the game, all spectators are given the same box to stand on in an attempt to see the game. This tool enables one spectator to see the game, while the other two are still unable to see over the fence. The metaphor reinforces the sentiment that *equal* does not meet everyone's needs. In the second image of the game, all spectators are given the size box that allows them to see the game. The metaphor here reinforces equality- that everyone gets what they need. The final image shows the fence removed completely which is a metaphor for justice- all barriers to accessing the game are removed so supports are not needed to see the game. In this conversation, Novak explained that she doesn't like this image, despite all barriers being removed to access, because what we are really looking for is for everyone to be able to actually play the game. Often in education, students are "integrated" into math class (we refer to this as Main Lesson)- or the lesson involving grade level content. In this situation, students are in the room, but are not often included in the learning. Every single child deserves affirming learning opportunities of grade level content in math. In order for students to engage in this type of learning, math must be made accessible to all students to promote the feeling of belonging, inclusion and affirming students' identities.

Relationship building is the foundation for providing all students with a humanizing math experience that involves the feeling of belonging. Humans are instinctively wired for personal connection, especially with a caregiver (*teacher*) (Brown, 2015). Belonging requires trust. *I trust you as a learner and you trust me to provide opportunities for you to choose from. I believe in you as a learner and represent you in the math we learn.* Along with a belief in competence from both teacher to student and student to self, students must feel that they are ***valued*** in order to feel like they belong. They must feel like their voice is heard and that they have choice and autonomy based on their understanding of themselves as a learner. Belonging requires students to monitor and direct their own learning so they can work independently but safely ask for help when needed. When students feel that they belong, they are able to use their social-emotional skills to self-manage and self-regulate so their brain is available for learning (Shanker, 2017).

Finally, belonging requires a self-reported sense of **inclusion**. Students must actively identify as part of the group. Students must feel that they are represented (Oyserman, et. al,. 2006). For students to gain this sense of inclusion, they must be part of a learning environment designed so all students can move safely throughout the room and access what they need (CAST, 2018). In order to achieve equity, inclusion, and justice- students need to feel like they belong. The barriers to belonging are removed and students are actively included in the learning. We don't want kids to just WATCH the learning happening, but be engaged in it- don't just watch the game, be PART of the play (Novak, 2022).

All Learners Network Strategies/Routines to proactively create a class culture that encourages belonging.

How do we achieve each of these elements of belonging? The All Learners Network Lesson Structure including Launch, Main Lesson, Math Menu, and Closure supports access to grade level content for all, while creating a welcoming, inclusive environment supported by trusting relationships. Through the ALN Lesson structure, students are actively engaged and encouraged to participate in mathematical dialogue throughout the lesson. Students are supported in their ability to make sense of their thinking, reason through the thinking of others and justify their solution. Students are explicitly taught HOW to engage in math talk and supported in making choices that meet their individual needs. Following the ALN lesson structure helps to create an environment where students are seen as the individual human beings that they are.

First, we need to ensure our routines are clear and consistent while allowing students to have choice. A guidepost for UDL is a clear goal with flexible pathways (CAST, 2018). Katie Novak and Novak Education Consulting share a "Would You Rather" resource that allows educators to recognize and eliminate barriers to instructional practices historically used in classrooms to provide more flexible pathways for students to achieve the goal (https://www.novakeducation.com/hubfs/Resources/Would_You_Rather.pdf). For example, if the goal is for a student to communicate their mathematical thinking, the classroom teacher could consider flexible pathways to reach that goal. Students may write, draw or record their thinking using an audio recording device. If the goal is to use appropriate tools strategically, the teacher

may allow students to access the tool both virtually and hand-held. When our routine is consistent and students know they will understand the goal of the lesson and have multiple pathways to demonstrate understanding of that goal, students feel they are seen as human beings, that they belong in the classroom and that their individual needs are being met.

Sending a message that students are capable ensures all students belong to and are valued members of the learning community. Instruction and routines are designed with Social Emotional Learning (SEL) and executive functioning skills in mind, as well as providing time for self-regulation. Center for Applied Special Technology (CAST), a nonprofit education research and development organization that created the Universal Design for Learning (UDL) framework and UDL guidelines stress the importance of considering students' SEL needs as well as their ability to self-regulate in order to engage in learning. CAST promotes the importance of developing learners' intrinsic abilities to regulate their own emotions, motivations, and identify their individual learning needs (CAST, 2018). As educators, we must acknowledge this humanity in all students- these individual differences- that make our learners who they are. If we want students to feel like they belong and engage in the learning taking place in the classroom, we also must explicitly address the specific skills, habits and mindsets that make up Social Emotional Learning (SEL) Competencies (CASEL, 2020).

The ALN Lesson Structure, aligned with CASEL's Three Signature Practices (CASEL, 2019) positions all students as essential members of the learning community. These signature practices include an opening, inclusive activity (at ALN, we call this a Launch), engaging instructional strategies (at ALN, we promote a variety of strategies to engage students in grade level learning) and an optimistic closure (CASEL, 2019). Using CASEL's framework through the ALN Lesson Structure, teachers can provide high quality instructional opportunities while supporting students' social-emotional learning. First, open each class with a welcoming, inclusive activity (CASEL, 2019). In math class, this is a Launch, or a Number Sense Routine, that is used daily during the first 5-15 minutes of a balanced math block for purposeful, discussion-rich learning opportunities. The purpose of this time is to encourage all students to engage in the math lesson for the day within the first 5 minutes of the math block (Lang, 2016). The Launch should be engaging and open-ended enough that all students can participate. Launch provides opportunities for dialogue between and among peers. Students learn to communicate effectively through regular

conversations about the math they do. This is especially important for students who are multilingual or learning English, as well as students with a communication disability (Chapin, et. al, 2009).

"LAUNCH has been an amazing addition to my math instructional routine. This is a time that all of my students can access the material at their developmental level. The beauty of LAUNCH is that ALL students can contribute to the discussion. I rarely see my students with disabilities raise their hands during first instruction, but when an image is presented for LAUNCH, their hands shoot up in the air. It is wonderful to see the confidence and eagerness they have to contribute and learn when given the right opportunity."

-Trudy Cioffi, Third Grade Teacher, Colchester School District

Humanizing mathematics is about ensuring ALL students' voices are heard and diverse ideas are valued in the classroom community (Tan and Padilla, 2020). CASEL's second signature practice involves embedded engaging instructional strategies (CASEL, 2019). Through strategy sharing, agreeing and disagreeing, noticing similarities and differences, noticing connections, and revoicing (Chapin, et. al, 2009), students develop active listening skills, the ability to disagree with peers respectfully, and the ability to communicate their own understanding effectively (CASEL, 2020). Student-to-student dialogue supports a class culture that combats isolation, disconnectedness, and alienation- all feelings that disrupt a sense of belonging. Providing opportunities for students to reflect on their own thinking as well as compare and contrast classmates' thinking supports connection and builds empathy. Ensuring students have multiple opportunities to explain their thinking and compare and contrast their thinking to their peers can also put further emphasis on a growth mindset and celebrates diverse ways of thinking. Olga Torres, a Mathematics Education consultant and bilingual elementary educator promotes "The Rights of the Learner"- the third being the right to speak, listen and be heard (e.g., engage in conversations, ask questions, share ideas, and listen to the thinking of others) as part of creating a humanizing math learning for students. This right is especially important for students who are multilingual or learning English as an additional language. Creating an environment where all students are able to engage in mathematical dialogue supports students' feelings of safety in the classroom, their belief in their own capability and their sense of belonging (Kalinec-Craig, 2017). Some strategies that supports students' right to speak, listen and be heard include "turn and talk" (think, then talk with a

partner and share your collaborated idea or revoice your partners' idea) or "gallery walk" (display student work and walk around and make comments) and are facilitated by the teacher to ensure students' diverse ideas are at the forefront of the class community (CASEL, 2019). Math Dialogue/Math Talk Moves support students in sharing their voice, increase engagement, and encourage increased dialogue and discussion between and among students. The goal is to shift the teacher from teller of information to facilitator of ideas among and between students. This shift creates belonging because the emphasis is on student thinking, not the teacher's. Therefore, students who don't understand that way -typically students who don't share the teacher's identity traits- are more included and valued in the learning (Blanke, 2018).

CASEL suggests ending each class period with an optimistic closure that highlights an individual and shared understanding of the work accomplished for the day (CASEL, 2019). At ALN, we use a Closure that revisits the sense-making process and ensures students have a clear understanding of the learning target and their role in making progress toward it is another instructional routine that supports students' social-emotional skills, as well as their connection to the community in their classroom (CASEL, 2019). The goal is for all students to feel welcomed into the learning environment, engaged in the content and end with a clear understanding of what they were supposed to learn. Students can reflect on their learning and interact with a range of other learners through frequent, intentional opportunities. Through the use of a Closure routine, students have additional opportunity for peer to peer dialogue to promote social awareness and relationship skills, as well as self-awareness and goal setting (CASEL, 2020). This culture of interactivity promotes belonging for students and celebrates their diverse needs as human beings (Kalinec-Craig, 2017).

In order for students to feel like they belong, we must provide opportunities for students to share their voice and have choice as math learners through a student-centered classroom environment. Students need multiple opportunities and means to choose how to demonstrate their understanding of meaningful mathematics, whom to work with, what order to complete tasks in and which tasks they feel best demonstrate their understanding. The lesson structure should support differentiation and choice. Through a Math Menu structure (also referred to as Math Workshop or Guided Math), students learn *how* to choose, *what* to choose and *why* they chose it. Students learn how to structure their work environment, manage their time, and communicate their

thinking effectively- all skills that support self-awareness, self-management and responsible decision-making (CASEL, 2019), as well as encourage engagement. It is imperative to provide a Math Menu opportunity within a math block to all students, especially students currently receiving Tier 2 or Tier 3 layers of instruction and students with Individual Education Plans (IEPs). Choice with access to varied forms of practice helps ***all*** students feel valued, respected, and engaged in the learning process. Math Menu affords the teacher a structured time to provide students with practice opportunities at their "just right level," as well as practice work from core instruction. Students' "just right" work is determined through ongoing formative assessment, reflection, careful consideration about progressions of learning and collaboration between the classroom teacher, special educator, interventionists and others. Educators also use this time to work with small groups and/or individual students as needed based on decisions made through this collaboration. Below (see *Appendix*) is a plan to get started with Math Menu. This is just one way to implement Math Menu. Teachers have autonomy to structure the 6-week implementation plan in a way that makes sense to them, their class culture, their routines and schedule. Consider using the Math Menu structure for 20-30 minutes a day 3-5 times a week. This structure supports students in building autonomy and reaching a bigger sense that they are responsible for their own learning and also affords teachers the flexibility to confer with students, instruct a targeted small groups, or observe students' progress toward both academic and SEL goals.

All Learners Network's mission is to support diversity, equity, inclusion and **belonging**. We refer to diversity and inclusion in terms of disparities experienced by protected groups that have been forced to be historically resilient. Students need to feel welcomed, valued, and heard in order to experience psychological safety. Rudine Sims Bishop emphasizes the value in providing windows, mirrors and sliding glass doors for our learners (1990). Children must find themselves reflected in the math tasks they are engaging with. Students from our more dominant social groups must see the variability in our world reflected back to them. We promote a humanizing learning environment when we provide opportunities for students to step into the lived experience of others. In providing math tasks that provide windows, mirrors and sliding glass doors for our students, we create a learning environment that promotes the value of all human beings and supports a sense of belonging. (Bishop, 1990). When students feel that they belong, they can learn. It is our responsibility to create a classroom environment where all students are seen

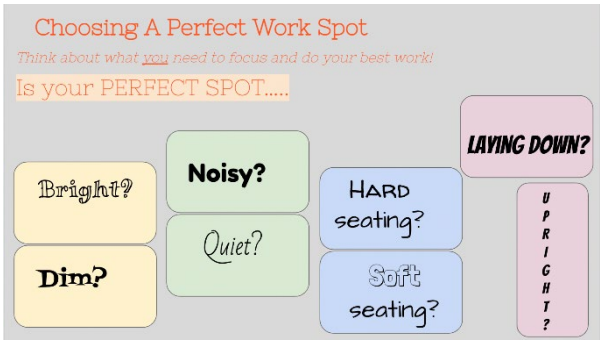
for their humanity- their individual human needs. Those needs are met, celebrated and supported so students develop autonomy as learners while developing social-awareness and connection with other students and their needs. It is our responsibility as educators to make the decision to ensure every student in our classrooms feels they belong there and sees value in the variability of our learning needs. We see you, we want you to be successful at learning higher mathematics and to live the quality of life you deserve. ***It matters that you are here.***

Appendix

<table>
<tr><th colspan="2">A Plan for Getting Started with A Math Menu</th></tr>
<tr><td>Week 1: The focus in week 1 is to introduce Math Menu, discuss class expectations and start having fun together by playing a math game! The goal of Math Menu is for students to have access to choice and differentiated work. We are starting to set the foundation to ensure all students have access to these opportunities.

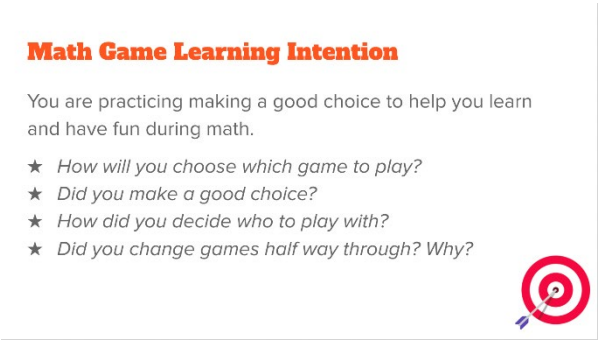
• Practice with low stress activities first- really talking about what it looks/sounds like and embedding the routine will really pay off!

Sample visual for choosing a perfect work spot:

 
</td><td>Focus questions for discussion:

• What is Math Menu?
• What does Math Menu look like/how does it work?
  ○ What is the teacher doing? What are students doing?
  ○ What are some problems/challenges that could come up? How could we solve them?
• What are our class expectations during Math Menu time?
  ○ How do we choose a good work spot?
  ○ How do we choose a partner to play/work with?
  ○ What about noise level- do we like it quiet, loud, in the middle?
  ○ How do we retrieve and replace materials?</td></tr>
<tr><td>Week 2: The focus in week 2 is to introduce choice. Students should have at least two games to choose from AND choose a partner to play with. Week 2 could also</td><td>Focus questions for discussion:

• How do you make a good choice?</td></tr>
</table>

introduce Skills Practice and a Must Do component. It is important to continue to review group work norms, Math Menu expectations and strategies for solving problems when they come up. *Sample visual for sharing prompts for student discussion that support SEL skills needed during Math Menu:*  	○ *Which game should you play (sometimes we choose a too easy game to practice and sometimes we choose a challenge game)?* ○ *How could you "level this game up" and make it more challenging?* • What goes in our Math Folder? • Where do we hand in our Skills Practice? How do we know we are making progress toward accuracy on our basic skills?
Week 3: The focus in week 3 is to introduce more components of Math Menu. You could start with Problem Solving or Journaling, depending on the information you need from students. Journaling is a great way to check in on how students feel about Menu and Problem Solving will give you information about understanding of content. Students should have at least two games to choose from, choose a partner to play with AND have a Must Do component (Skills Practice or Journaling/Problem Solving). I usually get started with Teacher Time this week too, just practice meeting with students while the rest of the class is working on Menu. It is important to	**Focus questions for discussion:** • What does it look like when students are working and the teacher is meeting with a group? ○ How do you get what you need if the adults are working with kids? ○ What is our expectation around moving around the room to go to the bathroom, get a drink, get what you need, etc.? • How will you manage your time? • What do you do when you are frustrated?

continue to review group work norms, Math Menu expectations and strategies for solving problems when they come up. *Teacher Notes:* • Clarify routines for handing in completed work while the teacher is working with students • Set expectations for how students will receive feedback on their work • Journal prompt suggestion: What do you think of Math Menu so far?	

Week 4: The focus in week 4 is to finish introducing all components of Math Menu- Game, Skills Practice, Journaling, Problem Solving Students should have at least two games to choose from, choose a partner to play with AND have at least 1 or 2 Must Do components (Skills Practice or Journaling/Problem Solving). Teacher Time should include a practice meeting with all students so students experience working with the teacher and working independently so they can develop time management strategies. It is important to continue to review group work norms, Math Menu expectations, strategies for solving problems when they come up and strategies for handling frustration when the teacher is busy working with students.	***Focus Questions for Discussion:***
	
	• We have introduced all components of Math Menu- what is working? What isn't working?
	• Are our systems working?
	  ◦ Do you know where to hand in finished work?
	  ◦ Do you know what to do if you finish something or want a break from it?
	  ◦ Do you know how to get and put back materials?

Teacher note: • Remember, Math Menu is meant to provide students with CHOICE and DIFFERENTIATED work (based on student readiness) so the teacher can focus on intervening/meeting with small groups without distraction!	
Week 5: For the next two weeks, you are practicing with a full Menu. You are rotating around the room, positively reinforcing the behaviors you expect during Menu. Students are practicing time management and material organization. You are practicing pulling groups, doing a quick activity and sending them back. These two weeks are an opportunity for you to gather information about students that you need in order to have intervention groups going. You are continuing to review and reflect on norms, routines and strategies for dealing with problems as they arise. *Teacher Note:* • *Math Menu is a great time to focus on activities that emphasize flexibility and efficiency- key components of computational fluency (Bay-Williams and SanGiovanni, 2021).*	***Focus questions for discussion:*** • We have introduced all components of Math Menu- what is working? What isn't working? • Are our systems working? • Are there problems that need to be addressed? • What is going well when working with other students? What could be improved?

• *Jennifer Bay-Williams and John SanGiovanni et.al share games and routines to support fluency in their Classroom Companions to Figuring out Fluency (Bay-Williams and SanGiovanni, et al., 2021 and 2022).*	

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