

Listening to Students: How Adult Learners Make Sense of Mathematics Discourse

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About the Author

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Introduction

"[The teacher] was trying to trip me up," Quinn told us, laughing, as she watched a video clip of her instructor pressing her to explain her reasoning. Quinn wasn't complaining; rather, she described this episode simply as "how she teaches," and made clear that she valued it. Other students, reflecting on their experiences, shared similar sentiments. For example, Wynonna noted, "It's teaching me more than one way to do something." Similarly, another student recalled that "Lauren [my teacher] wanted me to explain to everybody else how I got my answer."

When we design instruction, we make choices that ultimately influence students' relationships with mathematics and the learning process. We can select tasks, plan routines, and pose questions all in the hopes of opening up classroom talk. However, how do adult learners perceive our pedagogical choices, if at all? Do they understand what we are trying to do? Do they find it worthwhile? Data from learner interviews within the Adult Numeracy in the Digital Era (ANDE) project suggest that adult learners are highly aware of these classroom design choices. They do try to make sense of their instructor's work in facilitating mathematical discourse.

This article is the third and final installment in our series about mathematics discourse in adult basic education (ABE) classrooms. As part of the ANDE project, (see <https://andeoer.wested.org/>), we designed a technology enhanced adult basic education mathematics curriculum. A central component of the curriculum is facilitating rich mathematics discourse. In the Summer 2025 issue, we shared how we utilized three signature routines to scaffold teachers' and students' participation in mathematics discourse. In the Spring 2026 issue, we followed one instructor, Kim, as she examined her own discourse moves to better

cultivate independent learners. Across both articles, our focus stayed largely on instruction. In this article, we turn the lens toward learners' reflections on their ANDE experience.

Studying Discourse Through Adult Learners' Eyes: Video-Cued Interviews

To better understand students' experiences and interpretations of classroom events, we conducted video-cued interviews (Tobin & Hsueh, 2007) with adult learners in the ANDE courses. Students were shown short clips of ANDE classrooms then invited to reflect on what they saw and how it compared to their own classroom. Because students were responding to concrete, shared footage rather than to abstract questions about teaching, their comments offered a grounded window into how these adult learners made sense of mathematics discourse in their ANDE classroom. What we heard was encouraging. Students did not simply tolerate the discourse practices their instructors had established—they recognized them, described their purposes, and explained how the practices supported their learning.

We conducted the interviews with three adult learners. In each interview we showed four video clips of real ANDE classrooms taught by two instructors, Mrs. Lauren and Mrs. Kim. The students we interviewed came from these same classrooms. We selected the clips to elicit reflection on a different facet of mathematics discourse central to the ANDE approach. Below is a brief description of each clip:

- Mrs. Lauren facilitating a whole-class discussion during a signature routine (Jackson, 2025). We chose this clip to understand how learners experienced the signature routines—the moments specifically designed to invite more students to share their thinking publicly.
- Mrs. Kim facilitating a discussion during a signature routine in which she asks several follow-up questions that prompt the learners to better articulate their thinking. We used this clip to elicit a contrast from typical teacher-centered, procedural focused instruction and draw out students' perspectives on the role of discourse itself.
- Mrs. Kim facilitating a small-group discussion. The clip is full of laughter as students negotiated their strategies to solve a problem within the context of budgeting. We chose this clip because the laughter strikingly contrasted with what we typically observed in mathematics classroom and the students' use of real-world knowledge to develop strategies was interesting to us as researchers.
- Mrs. Lauren's students working in pairs as they solved a proportional-reasoning problem with no immediate, apparent solution pathway. We used this clip to inquire into students' ideas about perseverance and how these kinds of open tasks compared with the work learners encountered in other settings.

In the sections that follow, we share what the three interviewed learners (Quinn, Gary, and Wynonna) told us. Their insights are organized around three themes: the press to explain

their thinking, participation as a personal and shifting choice, and discourse as a way of building community.

The Press to Explain Their Thinking

The feature of ANDE instruction that learners named most readily was the expectation that they explain how they arrived at an answer. Watching the clips, students recognized this press immediately and treated it as ordinary. One learner, Quinn, described an instructor who "wanted me to explain to everybody else how I got my answer," and concluded matter-of-factly, "that's how she teaches." Wynonna characterized the teacher as "just letting everyone say their piece" before working to "break it [what students are saying] down, see if it makes sense."

Notably, the learners we interviewed articulated why this press was worthwhile. They did not describe explaining their thinking as a hoop to jump through; they connected it to their own learning and to the learning of their peers. Learners spoke about the value of hearing how others approached a problem, with Gary observing that "if you're listening to different inputs from different people, it all helps." Wynonna appreciated being shown more than one path to a solution, noting that the approach was "teaching me more than one way how to do something." In other words, students understood the press to explain as serving a purpose beyond the individual exchange: it revealed multiple strategies and made peers' reasoning available to all learners.

Learners also recognized that this kind of instruction was distinct to their ANDE experience. Several contrasted it with prior classrooms in which a teacher simply demonstrated a procedure and students reproduced it. Gary watched a clip and concluded that instructors "should be explaining how to get the answer to the problem like she did"—although, as the instructor in that clip later reflected, she had largely been eliciting student thinking rather than explaining the procedures herself. This gentle mismatch is itself revealing: Gary was accustomed to instructors carrying the explanation that an instructor handing the explaining back to the learners, at first glance, looked like the teacher doing the work. Across the interviews, students consistently valued being asked to reason aloud, even when the experience was demanding. As Quinn put it, with good humor, the instructor "was trying to trip me up"—a description offered not as a grievance but as recognition of a teacher pressing her to explain her ideas carefully.

Participation as a Personal and Shifting Choice

Learners understood participation in classroom discussions as a choice, one they made differently from day to day. They did not equate good participation with constant talking. Instead, they described a flexible sense of involvement that shifted with their confidence, their mood, and their grasp of the day's content.

Students were candid that their willingness to speak varied. "Sometimes I wanna talk and sometimes I don't," Quinn explained. Gary described days when listening was the more useful posture, noting that some days he talked a lot and other days he did not, and that simply taking in the discussion could be worthwhile in its own right. Importantly, students did not frame these quieter days as checking out. They distinguished between disengaging from the class and choosing, in a given moment, to learn by listening rather than by speaking. Quinn captured the difference when she described reaching a point of frustration where she would rather an instructor "just show me," after which she would "go back and do it again" on her own—a strategy for managing her own learning, not an exit from it.

At the same time, learners recognized that participation was not purely optional. Several articulated a sense of shared responsibility to the class. Wynonna put it pointedly: it is "okay not to know," but you still have to participate, because by being in the course "you are taking up someone else's spot" that another learner might have wanted. This is a striking thing to hear from a learner—an understanding that engaging in classroom discourse is a privilege of being in the class and an obligation to the community. Far from passive recipients of instruction, these students saw themselves as participants with a stake in supporting everyone's learning.

Taken together, learners' comments suggest they had internalized a sophisticated model of what it means to take part in the mathematics discourse. They calibrated participation to their needs without disengaging, and they held themselves accountable to their peers. These are the dispositions of learners who have taken ownership of their place in the classroom.

Discourse as a Way of Building Community

The third theme learners raised was in some ways the one that animated all the others: The sense that talking through mathematics together built a community. When students watched clips of peers debating a problem or laughing their way through a disagreement, they did not see noise or distraction. They saw a class that had become comfortable with one another—and they understood that comfort as something their instructors had deliberately cultivated.

Learners described their classrooms as places where people genuinely worked as a unit. "When I'm in class with everyone, I feel like we're all as one," Gary said, reflecting on how his class had "bonded" over time around a shared goal. He recalled that his instructor had been intentional about this from the start, helping the class agree on a set of norms so that everyone felt comfortable and no one felt shamed for not knowing. For instance, instructors used errors as opportunities to invite learners to elaborate on their reasoning, positioning mistakes as resources for deeper learning. Quinn echoed the same sense of ease, describing a class that enjoyed working in groups and an instructor who "knows our personalities" and used that knowledge to decide who to put together. That kind of grouping, students recognized, was not incidental—it was part of how the discourse was made to work.

Students also read the lighter moments of classroom talk as evidence of a healthy learning environment rather than a departure from learning. Watching a clip in which students laughed while debating, Wynonna observed that "people are enjoying the lesson," and contrasted this with being lectured at, which she found "just boring." She noted that laughter served more than one purpose: it reflected real enjoyment and engagement, while also being "a way to cope" when the mathematics got difficult. Far from undermining the work, the humor and back-and-forth helped students persevere together.

Underlying these reflections was a clear-eyed sense of the norms that made such a community possible. Learners spoke about the expectation to treat one another as capable adults and to keep the space respectful even when a newcomer arrived unsure of how to behave. Wynonna described the instructor's role in setting that tone so that people could "feel comfortable to be themselves, to be open, and not be afraid to speak up and engage." Learners stated that the safety to take risks in mathematics discourse was not accidental. It was the product of the instructors' steady, intentional work to build a community.

Implications for Practice

The adult learners we interviewed noticed, understood, and valued the discourse practices in their classrooms. In light of these participant perspectives, we distill several key implications for adult basic education (ABE) mathematics instructors and policymakers.

First, learners' comments are a reminder that the work of establishing discourse practices is not invisible to adult learners. Instructors sometimes worry that pressing students to explain their reasoning, or waiting through a long silence, will be experienced as frustrating or pointless. Our interviews suggest that students can hold both reactions at once—finding a moment demanding and recognizing its value. Quinn, who joked that her instructor was "trying to trip me up," understood perfectly well what the instructor was doing. These findings provide a clear reason to persist with discourse practices even when they feel effortful in the moment, and to trust that students are making meaning of them over time.

The ANDE curriculum provides a set of activities and routines, called Cultivating Inclusive Resilient Communities of Learners (CIRCL) Supports (see <https://ande-oer.wested.org/circl>). These CIRCL supports are research-backed strategies that improve learners' confidence and sense of belonging. We believe that Quinn's, Gary's, and Wynonna's instructors' use of the CIRCL supports created conditions for them to experience mathematics learning in the way they have described. For instance, the "Learning Community Agreement" activity is likely to have informed the way these students spoke about their commitment to uphold their classroom norms and support their peers' learning. Other activities such as "Embracing Growth" and "Normalizing Productive Struggle" may have contributed to these learners' willingness to utilize classroom discourse to seek help from their peers as they worked through challenging problems, rather than avoid the challenge.

Second, learners' nuanced view of participation invites instructors to broaden what they count as engagement. If students themselves understand listening as a legitimate way to learn on a given day, instructors might resist reading quiet participation as disengagement, choosing instead to look for the pattern of a student's involvement across many classes. At the same time, students' sense of obligation to their peers suggests that naming this shared responsibility—being explicit that each person's thinking is a resource for the whole room—may resonate with adult learners more than we assume.

Third, the community that students described did not arise on its own. Students consistently traced the safety and ease of their classrooms back to deliberate moves their instructors made: agreeing on norms, grouping students thoughtfully, and treating learners as capable adults. The relational work of building a community is not a preliminary to the mathematical work; it is what makes meaningful mathematics discourse possible. We contend that policy plays a large role in the extent to which this sense of community can be fostered in ABE mathematics classrooms. Many ABE mathematics classrooms utilize a one-to-one tutoring model, an open-enrollment model, or both. Such policies and practices make it difficult to cultivate the relationships and sense of community that propelled Quinn's, Gary's, and Wynonna's engagement and learning. We advocate for the adoption of a cohort structure in ABE mathematics courses, particularly when utilizing context-rich, problem-based curriculum such as ANDE, to reap the learning benefits described.

Conclusion

Across this three-part series, we have approached mathematics discourse in adult basic education from three perspectives. We began with the signature routines that scaffold teachers' and students' entry into discourse, then followed one teacher as she refined her discourse moves to cultivate independent learners. In this article, we examine how the students themselves conceptualized their learning experiences..

Their responses provided a clear picture. Students recognized the press to explain their thinking and understood why it mattered; they held a thoughtful, flexible view of what it means to participate; and they experienced classroom discourse as a way of belonging to a community of learners. These are not the responses of learners passively receiving instruction. They are the responses of learners who perceive the structure of their classrooms and have come to value it. Instructors that would like to initiate new discourse routines in their classrooms, where students perceive the benefits, can begin by utilizing the ANDE Signature Routines (see the Summer 2025 issue); the signature routines provide a way for instructors to practice inviting students to share their reasoning and probing students' thinking. At the same time, the CIRCL activities can be utilized to build community norms and productive habits of mind that support learners to take intellectual risks while engaging in mathematics discourse.

We hold these findings with appropriate humility. They come from a small number of interviews with ANDE learners and we make no claim that every ANDE learner

experienced mathematics discourse as these students did. Learners may also have been inclined to speak generously about their own classrooms. Still, they provided a grounded account of how the discourse practices described throughout this series can be received and understood by the people they are meant to serve.

The routines and discourse moves we have described in this series are in service of learners—and it is the learners who are best positioned to tell us whether that instruction is working. ANDE classrooms are a significant departure from standard ABE mathematics classrooms. Instructors need thoughtfully designed resources coordinated with professional development to enact such ambitious instruction, which was provided by the ANDE project. We invite you to utilize the ANDE curriculum and resources (<https://ande-oer.wested.org/>) to support your efforts to promote meaningful mathematics discourse. Quinn, Gary, and Wynonna suggest that when instructors do the patient work of building discourse-rich classrooms, adult learners notice, understand, and welcome it. We hope these articles encourage you to listen, as we have, for what your own students can tell you about the discourse in your classroom.

References:

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