Doing and Talking Mathematics: Engaging ELLs in the Academic Discourse of the Mathematical Practices

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Abstract It is critical that educators promote full inclusion of English language learners (ELLs) in STEM courses. This chapter presents a process and resources for enacting a discourse-centered pedagogy that builds mathematical understanding while simultaneously engaging and supporting students to develop the language of complex thinking. Using a small set of Teacher Discourse Moves and Student Discourse Moves, teachers focus on deepening students' mathematical reasoning in ways fully inclusive of ELLs, while also helping all students build the language of complex thinking and mathematical argumentation.

1 Introduction

Since the adoption of the Common Core State Standards (CCSS; National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010) many educators have noted changes in the landscape of teaching and learning. One teacher with whom we worked exclaimed, "New teacher or old teacher—doesn't matter. We're all on a new playing field today!" The CCSS, taken overall, increase emphasis on students' critical thinking, problem solving, and analytic tasks in core academic subjects. In mathematics, the Standards for Mathematical Practice (or more simply stated, the mathematical practices) articulate habits of mind that constitute mathematical reasoning, stating: "One hallmark of mathematical understanding is the ability to justify, in ways appropriate to students' mathematical maturity, *why* a particular mathematical statement is true or where a mathematical

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rule comes from" (National Governors Association for Best Practice & Council of Chief State School Officers, 2010, p. 4).

The mathematical practices "implicitly demand students acquire ever-increasing command of language in order to acquire and perform the knowledge and skills articulated" (Council of Chief State School Officers, 2012, p. ii). These changes have broad implications for English language learners (ELLs), especially regarding the dialogic, discourse-rich nature of the mathematical practices. Students—all of them—need to be talking more and talking together. An increase in collaborative, reasoning-focused discussion affords ELLs a tremendous opportunity to strengthen their effectiveness in using English.

Yet, at a time when ELLs are the most rapidly growing segment of the K–12 student population, ELL instruction is often characterized by patterns that do not maximize ELLs' opportunity to learn:

- In whole group work, many teachers continue to use primarily rapid-paced IRE interaction patterns (teacher *inquires*, student *responds*, teacher *evaluates* (Schegloff, 2007)), which move rapidly through a planned series of teacher or textbook ideas rather than explore student ideas and which also provide few opportunities for students to say more than a few words or phrases.
- In small working groups, valuable student conversation opportunities tend to be focused on procedures and task accomplishment, rather than on meaning-making, and either exclude ELLs altogether or position them as listeners rather than initiators of ideas.
- Mathematics instruction for ELLs often attempts to take language out of mathematics by focusing on worksheets of number-only computational problems.
- Language development in mathematics is still often viewed primarily as vocabulary instruction.

Classroom practices like these offer ELLs few opportunities to develop the linguistic skills necessary for effective engagement in the mathematical practices and in the rich academic discourse that helps all students learn to reason deeply and critically and express their reasoning effectively.

Given the opportunity gap that exists for ELLs in many classrooms and their low rate of involvement in STEM careers, the need for resources that are fully inclusive of ELLs is critical. Although some see disproportionate engagement in STEM careers as a function of ELLs opting out of STEM at the college level, Pruitt (2015) remarks:

> The "leaky" STEM pipeline is a problem, but not having students to go into the pipeline is a bigger problem… significant portions of the U.S. population cannot even see themselves in STEM careers because they feel science is reserved for some kids, not all. (p. 2)

This chapter will offer mathematics teachers a set of resources to support their shift to reasoning-focused instruction, their efforts to strengthen students' reasoning, and their support of students' increasing effectiveness in language use—all of this in ways fully inclusive of ELLs as sense-makers along with their classmates. Additional resources and video examples of this approach in use can be viewed at the project website, Doing and Talking Math and Science, at http://stem4els.wceruw.org/

2 Approach to Teaching Mathematics to ELLs: Doing and Talking Mathematics

The teacher's comment above about the new playing field emphasizes the new roles we are all invited to step into. Many of us have experienced teaching and learning as the delivery of knowledge, rather than the co-construction of knowledge, but new content standards call for a new way of operating. The strong emphasis on students' critical thinking and collaborative problem-solving as reflected in the Standards for Mathematical Practice transforms the work of teaching and learning in powerful ways.

We have worked with a group of mathematics and science teachers to describe the new roles for both students and teachers. Teachers identified key aspects of their new role as creating opportunities for students to reason together about complex questions that matter, and focusing more on the quality of the students' mathematical reasoning than on the immediate correctness of their answers. Additionally, teachers noted the importance of helping students persevere in the work of understanding one another's reasoning, and of modeling more precise or complex language when and if it was needed. Students' roles shifted to align with these changes, requiring careful listening to and tracking of one another's logic, and acceptance of the responsibility to always be ready to comment on the idea under consideration. These new roles are congruent with the descriptions of teaching and learning endorsed by the National Council of Teachers of Mathematics in *Principles to Action: Ensuring Mathematical Success for All* (Leinwand, Brahier, & Huinker, 2014).

2.1 The New Game: Strengthening Reasoning, Strengthening Language

The mathematical practices focus our attention on students' critical thinking and collaborative problem-solving—skills that extend beyond school into family life, successful work, and civic engagement. They remind us that learning mathematics is much more than memorizing formulas or procedures or definitions. Learning mathematics involves learning to construct and convey meaning in particular ways by doing new things such as arguing from evidence, specifying the conditions under which something may be true or untrue, and creating models to help explain emergent understanding. In this regard, ELLs are meaning-makers along with their peers. Everyone in the class is learning new ideas and new ways of thinking, and—since no one is a native speaker of academic language—everyone is learning new ways of using language.

We recognize that ELLs come to their classrooms with multiple ideas about numbers and patterns as well as with experience in making meaning in one or more languages. Given these strengths, ELLs are well able to engage in mathematical reasoning and, when properly supported, able to engage in discussion of their reasoning. If we educators are successful in tapping into those assets and capacities by positioning students as questioners and thinkers and positioning ourselves as facilitators of student reasoning, so that we engage ELLs alongside their classmates in the iterative and collaborative sense-making practices of mathematics, both ELLs' knowledge of mathematics and their linguistic effectiveness will be strengthened. A graphic illustrating this approach can be found on the project website, http://stem4els.wceruw.org.

Grounded in a *language in use* approach, we focus not on a preconceived notion of the language *of* mathematics, but instead on language *for* mathematics. We focus on supporting students' collective engagement in the analysis of complex ideas and on exploring, analyzing, and critiquing one another's ideas. We also focus on the language they need to explain their complex thinking to one another. Mathematical terms and definitions are learned along with the language for explaining ideas, but student learning is grounded in experience with the concepts or entities described by those terms and in the activity of working with those concepts with classmates. One teacher using this approach remarked with surprise that she no longer had to preteach definitions because her students learned the meanings through activity.

This focus on language *for* mathematics means that teachers attend to students' ability to convey their intended meanings effectively—not always with perfect grammatical correctness, but effectively enough that others can understand. Teachers implementing this approach are not focused primarily on linguistic correctness, but instead pay attention to supporting students' growing effectiveness in conveying their ideas to others by marshaling the full range of the semiotic resources they possess: drawings, gestures, and words or phrases from multiple languages. Teachers offer models of additional ways of conveying meaning when needed, and, over time, students take up these suggestions as they are able. We have seen that the need for students to make sense of ideas together serves as an engine that drives language development. A number of teachers noted that the ELLs in their classrooms seemed more comfortable speaking up and taking risks with new language, and that their classmates had become more patient and persistent in their efforts to understand ELLs, asking questions to clarify their intended meanings, and suggesting new ways of conveying those meanings. In short, students were helping one another learn language.

This approach works well in content classrooms since it is focused on helping students do meaningful things with language during content learning. We focus on helping ELLs learn language *while* and *through* doing mathematics alongside their classmates—not beforehand or as separate from mathematics. Language serves as a tool for collaborative meaning-making, and learning is intimately connected to shared activity and to students' needs to construct meaning together. Students learn to *talk* mathematics as they learn what it means to *do* mathematics.

2.2 A Three-Part Game Plan

To be effective as educators and students on this new playing field may call for a change in familiar, well-scripted instructional methods. Together with experts in mathematics education and with participating teachers, we developed a set of resources to support this move toward a reasoning-centered, discourse-rich style of instruction. Our three-part "game plan," described in detail below in the Implementation section, is designed to assist educators in creating opportunities for collaborative meaning-making, for probing and strengthening students' mathematical reasoning, and for facilitating students' equitable engagement in critical, reasoning-focused discourse.

3 Theoretical Foundation of the Approach

The project's focus on ELLs as collaborative meaning-makers in mathematics is grounded in a *language in use* perspective. Some approaches consider language development to be a student-internal, cognitive accumulation of progressively more complex syntax and more varied, specific, or finely nuanced vocabulary in order to accomplish a broader range of functions over time (Heritage, Walqui, & Linquanti, 2015). In the implementation of such a "language as accumulation" view, it is often thought that students first come to *know* (language) and then they *do* (mathematics). This perspective can inadvertently support a deficit model of instruction that constrains ELLs to language-simplified classrooms and precludes their opportunities to engage in cognitively challenging courses that could foster their growth as learners and effective users of English. In contrast, the *language in use* approach views the process quite differently: By *doing* (mathematics) together, students come to *know* (language). In other words, language is viewed not as something internal that can be developed before the action, but as learned in the course of action, and more specifically, through action that occurs among individuals in a shared and meaningful context. In this sociocultural approach, meaning does not reside solely in language, but is a larger construct developed through negotiated and shared experiences during which participants construct and represent meaning together (Gee, 2005; Rogoff, 2008). To create meaning requires immersion in experience. Put simply, meaning is not stored language; meaning is shared experience (MacDonald & Molle, 2015).

In our approach, using a *language in use* perspective, shared activity drives language development. All students, including those still developing English, are given opportunities to engage in collaborative reasoning with resources and support for their engagement as active sense-makers. ELLs are provided the opportunity and support to be initiators of ideas along with their classmates, rather than simply passive responders. Language development for all students is thus deeply contextualized within equitable and interactive sense-making. Instructional attention is focused on students' effectiveness at marshaling their full range of sense-making resources (linguistic and other) in the service of their learning, rather than on the correctness of their language. This is an important and supportive shift, considering the rapidly growing number of ELLs in U.S. classrooms, many of whom may require years of English language development before their language is fully proficient. ELLs can, and do, engage in important reasoning and learning with imperfect language and it is this "doing" that supports their development of increased effectiveness in using English.

The affordances of the *language in use* approach align well with the language expectations and opportunities provided by STEM courses, as illustrated by the following quotes:

- "For all students, the emphasis should be on making meaning, on hearing and understanding the contribution of others and on communicating their own ideas in a common effort to build understanding" (Lee, Quinn, & Valdés, 2013, p. 3).
- "Effective teaching of mathematics facilitates discourse among students to build shared understanding of mathematical ideas by analyzing and comparing student approaches and arguments" (Leinwand et al., 2014, p. 29).
- "Only an emphasis on language as action … engages students in the meaningful learning of new disciplinary practices while simultaneously strengthening their language uses in those practices" (Heritage et al., 2015, p. 32).

Efforts to strengthen students' reasoning are not easily supported using a view of English development as the accumulation of more complex syntax and vocabulary. Indeed, as stated by Heritage et al. (2015), "teaching form and function in isolation from real, meaningful, discourse-based communication has not produced generative, transformative learning for ELLs" (p. 31). The *language in use* perspective does, however, focus attention on students' interactive meaning-making and harnesses the power of that interaction to support their growth in English.

Supported by a grant from the National Science Foundation, we developed a set of resources to support educators' and students' moves toward a reasoning-centered, discourse-rich style of instruction that works to simultaneously strengthen students' reasoning and effectiveness in using English. Our work began with a review of the literature on discourse for learning mathematics (Chapin, O'Connor, & Anderson, 2003), science education (Windschitl, Thompson, & Braaten, 2011; ambitiousscienceteaching.org), and on fortifying ELLs' complex language use (Zwiers, O'Hara, & Pritchard, 2014). Although known within the field of teacher education, these resources were not well known by teachers in our project. Many had not been produced in formats easily accessible to classroom teachers, and none that we discovered offered a simultaneous focus on both teacher and student actions. Central to our project was the intent to develop resources that: (a) could be quickly put to use by classroom teachers, (b) situated learning in an interactive context, (c) were generative rather than exhaustive in nature, and (d) supported not only changes for teachers but also students' agency as active learners and discourse partners.

4 Implementation of the Approach

This approach was developed primarily for content teachers, not language teachers. It focuses first on strengthening students' reasoning in STEM courses and secondarily on leveraging the opportunities provided by disciplinary practices (e.g., the mathematical practices) for increasing students' effectiveness as users of English. Both content teachers and ESL-content teacher teams have found it effective in supporting students in content classrooms, since the approach focuses on helping students construct and convey meaning during their content learning (MacDonald, Miller, & Lord, 2017). Both teachers and students focus on language as a tool for meaning-making, and learning is intimately connected to shared activity and to students' needs to construct meaning together.

Our approach has three components. Although we will describe them separately, and they can be learned and practiced in a variety of combinations, all three work together, and experience has shown that students and teachers need to put some of each element into play before beginning to experience the benefits of the approach.

4.1 Opportunity for Collaborative Meaning-making

Teachers in our project have described part of their "new role" as having responsibility to provide rich opportunities for students to reason together. This is consistent with the second Mathematics Teaching Practice from *Principles to Actions*:

> Implement tasks that promote reasoning and problem solving. Effective teaching of mathematics engages students in solving and discussing tasks that promote mathematical reasoning and problem solving and allows multiple entry points and varied solution strategies. (Leinwand et al., 2014, p. 10)

The emphasis on reasoning and problem-solving is an important one. Many of us have been taught that having students work in small groups is a good idea. Simply putting students into small groups, though, is not sufficient to achieve the gains we desire for our students (Lee, Cortada, & Grimm, 2013). Group time is often spent on task management rather than on shared discussion and analysis of ideas. ELLs are often assigned passive roles as listeners or as scribes for those who take more active roles in the processing of ideas. Our approach is designed for ELLs to join their classmates as initiators of ideas and as partners in the analysis of complex challenges and ideas—but all of this is centered on providing good activities to promote students' reasoning.

The initial challenge teachers in our project experienced was a strong curricular focus on learning mathematical procedures rather than on developing a deep understanding of key mathematical concepts. Like many mathematics teachers across the U.S. (especially those at the secondary level) whose curricula focus mainly on the teaching and learning of procedures for answer-getting, they were responsible for moving quickly and efficiently through a tightly packed curriculum, following the textbook order of topics, and spiraling back as needed when student performance failed to keep up with their curriculum pacing guide. As described by participants in our project, teaching often involved teaching mnemonic devices to help students remember things (e.g., the order of operations; the long division algorithm), rapidly checking the correctness of assigned homework problems, and designing worksheets for additional practice with procedures students seemed to not understand. Shifting their teaching focus on the quality of students' reasoning and understanding required support and easy access to new resources.

Where can we find activities that provide good opportunities for students to reason together? The website for the National Council of Teachers of Mathematics (www.nctm.org) can be helpful, and additional resources for finding activities are listed on the Resource page of the project website (http://stem4els.wceruw.org). One seventh-grade algebra teacher shared that she simply searches the Internet for "meaning-making activities for seventh grade algebra!" Others suggest looking at the extension activities located at the end of a textbook chapter. Using those at the unit onset, rather than at the end, can stimulate a lot of curiosity and thinking and can jump-start students' sense-making regarding the math concepts they will encounter in the unit.

What are some hallmarks of effective meaning-making activities? Most importantly, the activity or challenge or question should afford an opportunity for students to explore multiple ways of approaching and reasoning about the task (Smith & Stein, 2011). Additionally, the activity should be multi-layered. After coming up with many strategies or ideas, students could be asked to discuss together why each strategy works or to explain why they think some strategies are more efficient than others. Spiraling through the ideas at these deeper levels of analysis provides important opportunities to reason and to strengthen the language students need to explain their complex thinking.

One teacher we observed introduced a unit on polynomials with a sorting activity. The teacher had noted that students in past semesters seemed not to realize how important a difference exists among expressions such as $3xy$, x^3y *and* $3x^y$, and she wanted them to come to this realization through activity rather than through her reminders. Small groups of students were given a set of cards with different types of polynomial expressions, and were asked to collaborate in sorting them into categories and then justifying their categorizations. Although several students asked her if their categorizations were correct, or how many categories they should have, she responded with questions that probed their reasoning and kept them working toward clarification as a group: "I see you have these three things grouped together. Can you explain why? Do you all agree on that? No? Oh, you think something different? Can you explain your thinking? Interesting… see what you can all figure out together." She was pleased with the increased awareness and understanding her students had after this activity.

Creating good opportunities does not guarantee that students will step forward into those opportunities. The idea that teachers and classmates are interested in their ideas, rather than getting to the right answer quickly, will be new to some students. Others may come from backgrounds in which students are expected to learn silently and to memorize what experts tell them. Others may have little knowledge of how to insert their ideas into the flow of an academic conversation, or have little confidence that their classmates will be patient with their slow or imperfect language. Both the Teacher Discourse Moves and Student Discourse Moves described below are critical to supporting students in taking important steps to engage with one another in the discourse of learning.

4.2 Teacher Discourse Moves to Facilitate and Deepen Students' Reasoning

Giving small groups of students an intriguing question to puzzle through together sets the stage for teachers to support students' growth in careful, critical thinking, and in effectively communicating their ideas. Teacher facilitation of students' reasoning involves activities such as posing purposeful questions and facilitating meaningful mathematical discourse (Leinwand et al., 2014, p. 10). The work always involves helping students listen to one another and think carefully about the ideas developing among them. Figure 1 shows the meta-cognitive framework of our six

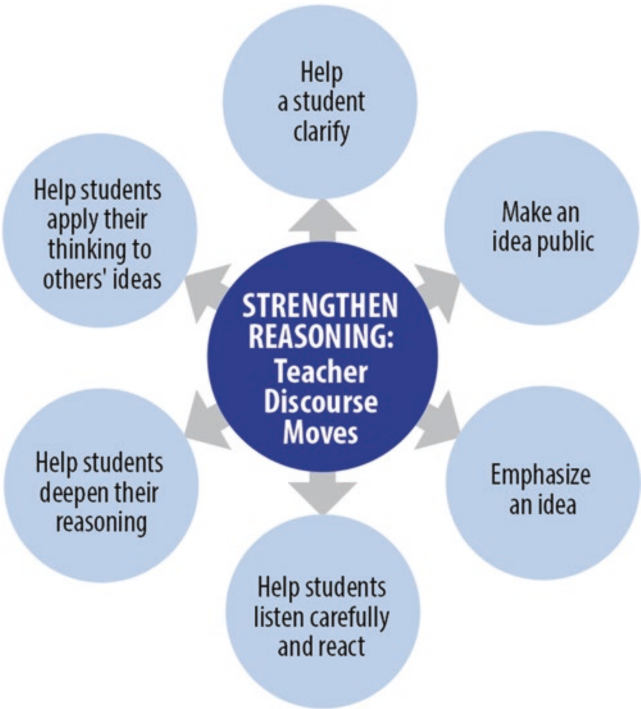

Fig. 1 Meta-cognitive framework for Teacher Discourse Moves

Teacher Discourse Moves; these strategies are used to probe and strengthen students' reasoning, to keep their ideas moving forward, and to keep students talking to one another. Teachers have identified this simple graphic as a helpful reminder of strategies they could use to stay out of the familiar "teacher as expert" mode and keep the responsibility for the idea in the hands of the students.

Table 1 displays linguistic examples of the Teacher Discourse Moves, written for students at three levels of English proficiency: beginner, intermediate and advanced. Most teachers found the examples in Table 1 useful initially to help them learn the Teacher Discourse Moves, but did not need them once they understood the Teacher Discourse Moves. Many simply enlarged and laminated the small graphic in Fig. 1 and kept it nearby as a reminder.

The Teacher Discourse Moves and their purposes are fairly transparent, but some elements deserve highlighting. Listed under *Help a student clarify an idea* is the hint to allow 20–30 seconds of wait time to elapse before giving a second prompt,

Table 1 Examples of Teacher Discourse Moves

Teacher Discourse Moves	Examples
Help a student clarify an idea	Provide individual thinking time and pair activities to help students express the "first draft" of their idea
	Charge student pairs with questioning and supporting one another until ideas expressed are understood
	Provide 10-20 seconds of wait time both before and after student responses
	"Can you show us what you mean?" "Can you draw that?" "Can you say more about that?"
Make an idea public and available for discussion	"Tell us more about what you're thinking."
	Revoice an idea to repair or model clearer language, but ensure that the ownership of the idea remains in the student's hands. "Did I say your idea correctly? Is that what you were thinking, or was it different?"
Emphasize an idea	Attend to all ideas, and be explicit about putting some on hold for later consideration.
	Re-broadcast generative ideas by revoicing, or by asking a student to paraphrase. This allows additional processing time for all.
	"That's interesting. Can you say that again for us?" "Will someone re-tell that idea for us?" "So, are you saying that…?"
Help students listen carefully and react	"Who can restate that for us?"
	"Who wants to explain the reasoning Group A used?"
	"How is that idea different from Mary's?"
Help students deepen their reasoning	"Can someone give me an example of that?"
	"How could we test that?"
	"What do we need to know more about now?"
Help students apply their thinking to others' ideas	"You look uncertain. What can you ask X to find out more?"
	"How does that idea connect to what Group A talked about?"
	"Which explanation is most like your group's? Talk to them and find out how they are different."

and to allow the same amount of time *after* a student has made a remark. We are asking students to think out loud. Thinking is hard and takes time, and putting complex ideas into words is not easy. Ideas rarely come out fully developed or clearly articulated the first time, even for the most experienced speakers. Waiting patiently for students to say more provides an opportunity for them to continue to explore their ideas aloud, or to state them more clearly, and this gives others additional opportunities to follow along and think it through with them.

Another important strategy that shows up under *Make ideas public* and *Help students apply their thinking to others' ideas* is the reminder, when revoicing a student's idea, to always check with the student to see if you have expressed the idea correctly. After all, it is the student's idea, and we want to make sure our revoicing does not change it, or steer the discussion in a different direction. We have observed remarkable examples of ELLs persisting in clarifying their ideas aloud in response to this humble question from a teacher, "Did I say that correctly? Try again, please. I'll try to do a better job of understanding." We need to build this same habit among our students, as well, so that they respect the integrity of one another's ideas and develop the patience and persistence needed for collaborative and respectful discourse.

4.3 Student Discourse Moves for Collaborative and Critical Thinking

When we present students with intriguing challenges and work to facilitate and deepen their reasoning, some will jump right in and others will hold back. Some students have learned to spit out correct answers quickly or to keep quiet if they cannot; some have not had much experience in explaining their thinking, or are uncertain how to word things so others will understand. But to activate students' collaborative thinking and discussion—the engine driving language development—we need to help students learn new ways of interacting. Students need strategies, support, and practice as they learn to examine issues and build new understandings together. A small set of Student Discourse Moves helps students learn to choose among seven choices they can make when an idea is on the table for discussion.

Just as with the Teacher Discourse Moves, the Student Discourse Moves have examples of language students can use to enact the moves, some of which are shown below in Table 2.

The teachers in our project with a high proportion of ELLs in the classroom taught one Student Discourse Move at a time. They posted a large copy of the graphic of all the moves (shown below in Fig. 2), referred to them as they came up in conversation, and gave students small copies of the language examples in bookmark form, one at a time. Some moves took longer for students to learn than others, but after a few months, teachers noted that all students were learning newly introduced moves pretty quickly.

Table 2 Student Discourse Moves

Student Moves	Examples
Tell and explain a new idea	"I think…"
	"The evidence for that is…"
	"Since both situations are similar, we could…"
Clarify an idea	"Say again, please."
	"What did you mean when you said…"
	"I wonder if what you're saying is…"
Restate or summarize an idea	"He said…"
	"In other words, …"
	"The suggestion was made that we…"
Compare ideas	"Same thing."
	"Our idea is better because…"
	"The other method would be a better test of …"
Support an idea	"Good idea because…"
	"Remember, in our book it said…"
	"The advantage of that method would be …"
Build on an idea	"Let's try it."
	"That's what we should do next."
	"That idea would help us figure out whether …"
Question or challenge an idea	"I don't think so."
	"But what about…"
	"Isn't there a more efficient way to…"

After an initial learning period, students experienced in expressing their ideas in English seemed not to need the language examples, but they were important supports for ELLs. Having easy access to them seemed to help ELLs speak more frequently and more confidently. It is important to make sure ELLs see the Student Moves only as examples and to remind them that there are many ways to say things. Teachers can leave some blanks on the page and keep a running list of additional examples to reinforce the generative rather than prescriptive use of these examples. We observed a wonderful interaction in one classroom when an ELL could not find his bookmark and another student reassured him, "There are lots of ways to say that. You could say…or…" This was one of several examples we observed of students learning language from and with one another.

Teachers have found that posting the graphic in Fig. 2 in the classroom serves as an ongoing meta-cognitive support. The idea that students are always responsible, every minute, for tracking the development of an idea and for being ready with a response to strengthen their own or the group's understanding is a new one for many students. Teachers can support students' integration of this framework of choices and their responsibility for action by being overt about the naming of both Teacher Discourse Moves and Student Discourse Moves as they take place. We have heard one teacher do this very playfully, "I like the way you moved that move!"

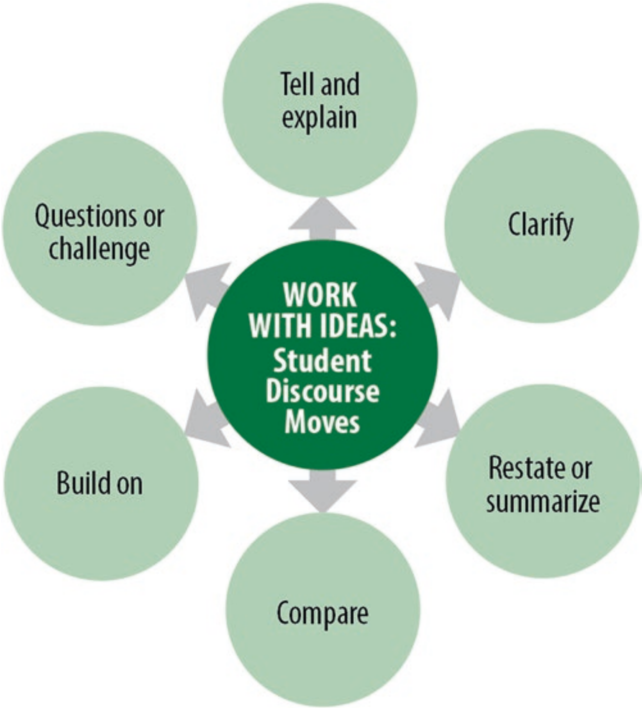

Fig. 2 Meta-cognitive framework of Student Discourse Moves

5 Conclusion

Moving to a discourse-centered pedagogy has provided many benefits to both teachers and students. For example, teachers have shared:

- "For the first time in 25 years, I'm certain that my students understand this. They don't need to memorize formulas or math jingles. They really understand the math." — seventh-grade Algebra teacher
- "Our ELLs are speaking up and offering ideas in ways they never did before. They feel smart now, and they feel proud, and they're willing to take risks with their language to share their thinking." — fourth-grade teacher
- "When I do my walk-arounds, I see 100% engagement in high-level math discussions. That's never happened before, and it's exciting." – principal in a participating school

The new landscape shaped by the CCSS Standards for Mathematical Practice call for changes from teachers and students. The emphasis on strengthening students' mathematical reasoning combined with the opportunity this provides for simultaneously strengthening the language effectiveness of the most rapidly growing group of students in K-12 schools invite us into new ways of structuring classroom activities and interactions. Resources described in this chapter can mediate this change. Teachers and administrators are clear that using the Teacher Discourse Moves to facilitate students' opportunities to reason deeply and critically together has had a profound effect on students' mathematical understanding. Similarly, the use of the Student Discourse Moves has opened opportunities for ELLs to join the discourse community of their classroom, acting as initiators of ideas rather than simply responders. When ELLs' ideas are solicited and valued, their classmates show patience and perseverance in their efforts to comprehend ELLs and to assist them in their explanations, thus enacting the negotiation of meaning-making that drives language development for ELLs.

Reflection Questions

1. What participation structures do you most frequently set up and facilitate in your classroom—teacher to individual students, teacher to small group, student to student?
2. Are you giving equal follow-up and attention to everyone's ideas: ELLs and English-fluent students? Boys and girls? Students whose ideas are easy to follow and hard to follow?
3. What were some interesting or surprising student ideas you heard this week? Are you satisfied with the way you integrated them into the class work?

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