Educational Practices Series

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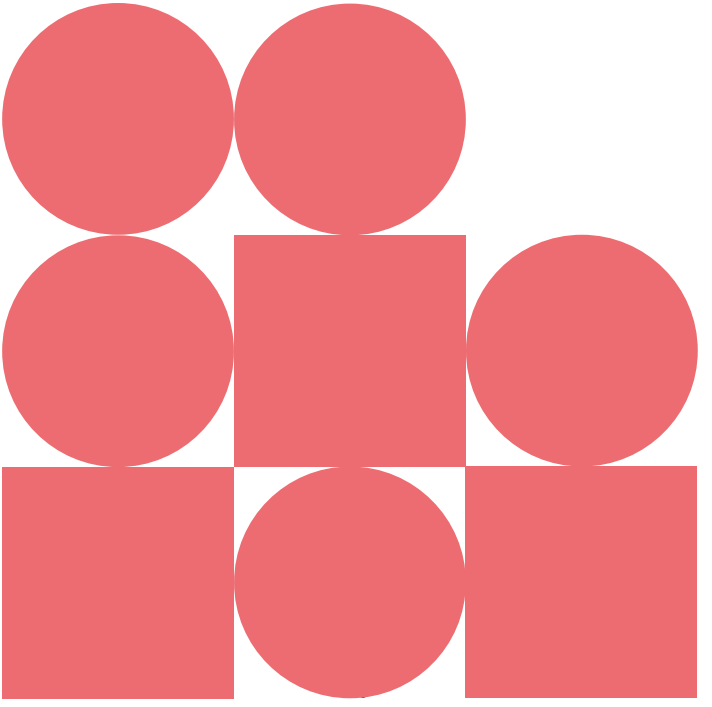
Accountable Talk: Instructional dialogue that builds the mind

by Lauren B. Resnick, Christa S. C. Asterhan, and Sherice N. Clarke



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The Series was started in 2002, as a joint venture between the International Academy of Education (IAE) and the International Bureau of Education (IBE). So far 29 booklets have been published in English and many of them have been translated in several other languages.

The success of the Series shows that the booklets meet a need for practically relevant research-based information in education. The series is also a result of the IBE's efforts to establish a global partnership that recognizes the role of knowledge brokerage as a key mechanism for improving the substantive access of policy makers and diverse practitioners to cutting-edge knowledge. Increased access to relevant knowledge can also inform education practitioners, policymakers and governments how this knowledge can help address urgent international concerns, including but not limited to curriculum, teaching, learning, assessment, migration, conflict, employment and equitable development.

Governments need to ensure that their education systems meet their core and indisputable mandate, which is to promote learning and, ultimately, to produce effective lifelong learners. With the aggressive pace of contextual change in 21st century, lifelong learning is a critical source of adaptability, agility to adapt, and the resilience required to meet challenges and opportunities. Yet, for many countries around the world, effective facilitation of learning remains a daunting challenge. Learning outcomes remain poor and inequitable. Intolerably high proportions of learners fail to acquire prerequisite competences for lifelong learning such as sustainable literacy, digital literacy, critical thinking, communication, problem solving, as well as competences for employability and for life. Systems' failure to facilitate learning co-exists with impressive advancements in education research, driven by research from diverse fields, including the sciences of learning, particularly the neuroscience of learning, and advancements in technology.

The IBE's knowledge brokerage initiative seeks to close the gap between scientific knowledge on learning and its application in education policies and practice. It is driven by the conviction that a deeper understanding of learning should improve teaching, learning, assessment, and policies on lifelong learning. To effectively envision and guide required improvements, policymakers and practitioners must be fully cognizant of the momentous dialogue with research.

The IBE recognizes the advancements already made, but also that there is still much more work to be done. This can only be achieved through solid partnerships and a collaborative commitment to building on previous lessons learned and continued knowledge sharing.

The Educational Practices booklets are illustrative of these ongoing efforts, by both the International Academy of Education and the International Bureau of Education, to inform education policymakers and practitioners on the latest research, so they can better make decisions and interventions related to curriculum development, teaching, learning and assessment.

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Introduction

When we think about talk in the classroom, most of us picture the same thing. The teacher stands at the front of the room, posing questions, asking students for brief answers, and evaluating their responses. This form of classroom dialogue, known as recitation, allows teachers to transmit facts and effectively manage large groups of learners. The assumption underlying recitation is that school is where children learn to repeat what others have deemed to be important knowledge.

However, we can and should set higher goals for all students. We can use the opportunity of classroom talk to teach students to think—to *make* knowledge. The time now devoted to the recall of facts can instead be devoted to helping students grapple with complicated questions, puzzle through new kinds of problems, and interpret complex texts. Rather than passively absorbing the small body of knowledge the teacher is able to transmit, students can learn reasoning skills by talking and arguing their way through problems to conclusions and solutions.

We and others call this type of structured discussion that supports learning "Accountable Talk" (2010). The differences between recitation and *Accountable Talk* go far beyond who is speaking and when. The nature and quality of talk, how teachers set up discussions and invite students to participate, students' motivation to learn, teachers' expectations of students, and students' expectations of one another and of themselves are all affected. Often, when teachers begin to use *Accountable Talk,* the change in the classroom is palpable.

So, what is this special kind of talk? It begins with students thinking out loud about a complex problem that requires collaboration: noticing something about the problem, questioning a surprising finding, or articulating, explaining, and reflecting upon their own reasoning. The teacher works to elicit a range of ideas, which may be incomplete. With teacher guidance, other students take up their classmates' statements: building on, challenging, or clarifying a claim (including a teacher's claim); posing questions; reasoning about a proposed solution; or offering a counter claim or an alternate explanation. There are clear standards for what counts as a good discussion, often described as the "three accountabilities:" accountability to knowledge (getting the facts right even if it is a struggle to find the right wording), accountability to reasoning

(providing a rational justification for a claim), and accountability to community (showing respect for the ideas and feelings of classmates). Overall, the teacher's goal is to sustain a *teacher-led* but *student-owned* process of shared reasoning that ultimately leads to a more fully developed, evidence-backed conclusion, solution, or explanation.

A common objection to *Accountable Talk* from educators is, "Our students don't know enough to have a meaningful discussion." Some educators believe they should structure lessons according to Bloom's taxonomy (1956), which orders cognitive skills on a hierarchy. If one sees lower-order skills as prerequisites for higher-order skills, then discussion opportunities could only benefit students who have progressed beyond the basics. However, research on discussion-based learning, recently assembled in Resnick, Asterhan, and Clarke (2015), does not support this view. Studies show that students in average and low-performing schools not only were able to participate in discussions, but they also significantly improved their general learning abilities, compared to peers who were not taught through a discussion method.

This booklet presents eight principles that address the "why" and the "how" of *Accountable Talk* [1]. While it is only an outline, we hope it persuades readers that talk can be a thinking process. We as educators can, and should, ask more of students than merely the right answer.

1. *Accountable Talk®* is a registered trademark of the University of Pittsburgh.

1.
Accountable Talk: What is it?

Talk that is accountable to knowledge, to reasoning, and to community produces learning.

Research findings

Research has shown that a certain form of classroom talk produces more learning than other forms (Resnick, Asterhan, and Clarke 2015), even beyond the subject under discussion. When students learn math, for example, by arguing their way toward understanding, they become better not only in math but also in other subjects such as science and literature. We and others call this form of talk "Accountable Talk." In Accountable Talk classrooms, students hold themselves responsible for getting the facts right, for thinking through challenges together, and for following rules that encourage participation (such as respectful listening). In other words, their talk is accountable to knowledge, to reasoning, and to community. Accountable talk is going on when students say things like, "How do you know that?", "Why do you make that claim, when it says here that...?", "We didn't get the same results the second time, and we're trying to figure out why", "I agreed with you at first, but now I think..."

The goal of Accountable Talk is to develop students' ability to think. By practicing the skills and habits of argumentation through social interaction, students learn to reason.

Application in practice

- **Accountable Talk is developed over time.** Students learn by participating.
- **Accountable Talk is self-reinforcing.** Practice produces better arguments. Students are more likely to be prepared to support their statements when they expect a challenge ("What's your evidence?"). The class also builds its collective knowledge over time. Students have access to a growing body of information on which to base claims and make arguments.
- **Accountable Talk includes everyone.** The quality of the argument, not the form of its expression, is valued in Accountable Talk classrooms. Everyone can participate because everyone has ideas, including students who are not fluent in the language used in the classroom.

Suggested readings: Alexander, 2006; Michaels, O'Connor, Williams-Hall & Resnick, 2010; Resnick, Asterhan, & Clarke, 2015.

2.
Accountable Talk: Setting expectations

Establishing the ground rules for Accountable Talk discussions helps support students' participation.

Research findings

Developmental studies have shown that humans become capable of argumentation soon after they learn to talk. To argue in sophisticated ways, however, individuals need opportunities to develop a set of intellectual and social competencies. In Accountable Talk classrooms, the teacher models the norms of argumentation (ways of behaving that further a discussion) and encourages students to take them up. Eventually, students become more sophisticated, self-directed, and flexible arguers.

Preparing a classroom for Accountable Talk discussions is an important first step in this process. Ground rules for classroom discussions create the conditions that allow students' skills and knowledge of argumentation to grow.

Application in practice

- **Establish norms for discussion.** Teachers should model and discuss norms with students, such as orderly turn-taking, respectful listening, and "wait time"—waiting with respect for a student to formulate a statement or answer a question.
- **Signal the goals of class discussions.** Signaling the goals helps students anticipate the kind of contributions that are relevant to and appropriate for that particular discussion. For example, in a whole-class discussion on the results of a science experiment, a teacher should highlight that the goal is to interpret the results, using evidence from the data to support claims.
- **Structure student engagement.** Teachers can structure student engagement by assigning roles to students within the discussion task. For example, in small-group discussions, students can be assigned the roles of summarizer, evaluator, scribe, "devil's advocate," etc. Roles focus learners' attention, enable them to take responsibility, and allow them to make a unique contribution to the shared activity. It is important to swap these cognitive roles so students gain experience taking on the whole range. As these roles become established practice in the classroom, it may not be necessary to explicitly assign them to students, but rather to encourage students to adopt the practices that the roles promote, during the flow of discussion.

- **Use sentence openers.** Teachers can use Accountable Talk "moves" to push students to think together. As Accountable Talk discussions become established classroom practice, students themselves may begin to use Accountable Talk moves to think with their peers.

Teacher-led transmission	Learner-led enquiry
"So, let me see if I have your thinking right. Are you saying...?"	Student reflects on his/her own thinking and verifies or clarifies it
"Do you agree or disagree?... Why?"	Student elaborates on a classmate's reasoning
"Why do you think that...?"	Student elaborates on his/her own reasoning
"Is it always true that...?"	Student evaluates his/her own or a classmate's thinking

- **Mark appropriate use of Accountable Talk norms.** Teachers should highlight and name what students are doing. "Jonathan, this is a good example of explaining your thinking." Marking helps to make explicit both the form of these norms (what they look like) and their function (why we use these norms to build and share understanding). Marking also provides praise for reasoning well, which fosters motivation and engagement.

Suggested readings: Kuhn & Zillmer, 2015; Mercer & Littleton, 2007; Michaels, O'Connor, Williams-Hall & Resnick, 2010; Herrenkohl & Guerra, 1998.

3.
Accountability to community: The right to speak

Positioning all students as valid and valued contributors in building collective understanding supports motivation and participation in Accountable Talk.

Research findings

We know that all students have the innate capacity to engage in Accountable Talk, and a strong research base supports its benefits. However, observational studies have shown that not all students participate in discussions. Some students participate only when they perceive their contributions to be valid and valued. For example, students may think they should only respond to a teacher's question with the "right answer."

Students who have difficulty making their thinking public can be supported in multiple ways. In managing the discussion, teachers can demonstrate that everyone has ideas to contribute. When students do begin to participate, a successful encounter with a challenge shows them that their minds can grow. Research has affirmed that students who believe the mind can grow are more successful academically than those who see intelligence as fixed. In Accountable Talk classrooms, students also support one another. When students observe their classmates using discussion strategies, classrooms as a whole begin to use those strategies more frequently. Over time, students recognize that sharing their thinking is a legitimate and valued contribution to a discussion. Their talk is accountable to the community.

Application in practice

- **Distribute responsibility.** Show that students are expected to build an understanding together. "Felix, do you agree or disagree with Alice? Why?" Distributing responsibility sends a message to students that they are all valued in the process of making sense of a topic in discussion. Cognitively, it prompts the expectation to share one's thinking and build on classmates' thinking.
- **Distribute participation.** Teachers should engage all learners to be Accountable Talkers. Even if an idea is not well articulated, or incorrect, it is worth pausing to explore it further. Encouraging wide participation shows that every learner's ideas matter, and the process of constructing understanding and working through misconceptions is a collaborative endeavor. And for the individual, the experience of being heard can be motivating.

- **Structure thinking together.** Ask questions that prompt students to reason about each other's reasoning. "Matthew, can you restate what Jamal has said? ... What do you think about that?" Prompting learners to relate to each other's ideas underscores the importance of the initial student's idea and pushes the discussion toward the construction of understanding.
- **Clarify and verify students' statements.** "Revoicing" students' ideas gives them the opportunity to reflect on and refine their articulation of their thinking. "So, do you mean...?" This move helps to communicate to learners that their ideas matter in the collaborative construction of understanding.
- **Value errors.** Thinking together means that some students will share faulty or incomplete understandings. In an Accountable Talk classroom, these ideas are explored in order to advance the target conceptual goal. "Marie, this is an interesting idea. Do you think this is always the case? Let's think about this together. ..." Incorrect ideas or misconceptions can serve as important anchors in the process of building collective understanding. Treating these ideas as contributions helps to mark the value of all contributions.

Suggested readings: Clarke, 2015; Anderson et al., 2001; O'Connor & Michaels, 2007; Dweck, 2006.

4.
Accountability to reasoning: Elicit students' explanations

Making student ideas and student thinking public allows for the identification of errors and misconceptions, and improves learning.

Research findings

Often, students have incomplete or even misconceived understandings of key concepts or procedures in the curriculum. They may use the right terms, but without really understanding what they mean. In order to identify these gaps and errors, teachers must make their students' thinking "visible" by asking them to explain their understanding or to elaborate on their statements.

Explaining has benefits for the learner. The mere act of trying to explain one's understanding of a certain phenomenon requires learners to organize their thinking and formulate it in a way that could make sense to another person. During this process, they may recognize their own gaps and errors. The attempt to explain, in and of itself, has been shown to improve information processing and the integration of knowledge. The further articulation of ideas also benefits the argument, as ideas that are allowed to remain half-expressed, and assumptions that are never expressed, do not play a useful role in the discussion. By contrast, ideas that are articulated for everyone to understand become objects to be discussed, negotiated, and refined. For teachers, making students' thinking visible is pivotal in identifying and understanding what their students already know, and in identifying misconceptions and errors that could get in the way of understanding new materials.

Application in practice

- **Ask students to elaborate.** One-word responses usually do not further an argument. Teachers should probe students: "What do you mean, exactly?", "Can you say more about that?", "Can you give us an example?"
- **Highlight process.** During problem-solving activities, ask students to show how they reached a certain solution, what steps they followed, and why they chose to solve it that way.
- **Elicit different solutions.** Ask for a range of solutions and explanations from different students.
- **Give "wait time."** It may take students some time to formulate their thinking and shape it for others to understand. For the class

overall, teachers should model "waiting with interest" to see what a student is going to say.

- **Value all contributions.** It is important to make sure that the atmosphere is constructive and not competitive. It is not about who is right. Quite to the contrary, students often learn a great deal by thoroughly exploring misconceptions, errors, and incomplete explanations.

Suggested readings: Chi & Wylie, 2014; Asterhan & Schwarz, 2007; Sadler, Sonnert, Coyle, Cook-Smith, & Miller, 2013.

5.
Accountability to reasoning: Engaging differences

Through participation in Accountable Talk, students practice, refine, and develop their reasoning competencies.

Research findings

As we have said, each student has a right and is expected to share his or her ideas in Accountable Talk, and it is important to ask for elaborated explanations from different students. However, this is not where it ends. In Accountable Talk, students and teachers reason about the different solutions or views that are introduced in the discussion. Differences are "highlighted" and participants collaborate to clarify and solve them through reasoning. Students are responsible for making logical connections and drawing reasonable conclusions. The talk involves searching for premises and evidence rather than simply supporting or attacking conclusions, or engaging individuals in a competition.

Research suggests that adhering to basic standards of reasoning is something people do quite naturally, and that, given the opportunity, even very young children can build arguments. However, the demands of skilled, academic argumentation are considerable. Studies show that even adults find it difficult to distinguish between evidence and explanation, to provide valid support for their claims, to take into account evidence in favor of their opponent's claims, and to refute counterarguments. Studies also indicate that such argumentation competencies are best developed through social interaction and dialogue. In other words, students become better thinkers by thinking out loud with others.

Application in practice

- **Elicit different viewpoints.** Asking for a range of views signals that there may be alternative ways of thinking about the topic and that it is always worthwhile to consider different options. "Who would like to comment on X?", "Can we think of a different solution or reason?"
- **Avoid quick consensus.** Generating alternative ideas or solutions is not easy for children (and adults alike), both for intellectual and for social reasons. Be prepared for situations in which everyone seems to be in agreement about one particular viewpoint. Avoid quick-consensus seeking by introducing dissenting views, alternative ways of looking at a problem, and challenging questions to reopen the discussion.

- **Explore and highlight differences.** It is not enough to accumulate different viewpoints. Students should explore how expressed ideas are related. Teachers can ask students to express their commitment to an idea ("Does anyone disagree/agree with X?") or explicitly ask them to compare ideas ("So, how is this different from X?").
- **Signal and mark moves of reasoning in discussions.** Marking reasoning moves helps students become familiar with the norms and terminology of reasoning. For example, in teacher-led dialogue, a teacher can mark when a student provides a justification. "So, Anita is justifying her view by giving us a reason why her idea is a strong one. What do you think about her reason—does it support her idea well?" In student-led activities (small-group dialogue), students may use flashcards with reasoning moves (claim, explanation, proof, challenge, etc.) or sentence openers, such as "My claim is that…", "I know that because…", "The evidence for my claim is based on…"

Suggested readings: Kuhn, Shaw, & Felton, 1997; Reznitskaya, Kuo, Clark, Miller, Jadallah, Anderson, & Nguyen-Jahiel, 2009; Mercier, Boudry, Paglieri, & Trouche, 2017; Kuhn, 1992; Topping & Trickey, 2007.

6.
Accountability to knowledge: Working with and toward knowledge

Students hold themselves responsible for grounding their claims in knowledge.

Research findings

Talk that is accountable to knowledge is based explicitly on facts, written texts, or other information that all students can access. In Accountable Talk, speakers make an effort to get their facts right and to make explicit the evidence behind their claims or explanations. They challenge each other when evidence is lacking or unavailable. A knowledgeable and skilled teacher is required both to provide authoritative knowledge when necessary and to guide conversation toward academically correct knowledge.

Some educators believe that students cannot have meaningful discussions until they have a certain amount of knowledge. Good reasoning does depend on good knowledge. Cognitive research on knowledge acquisition also shows that the opposite is true: The process of acquiring deep (versus superficial) knowledge involves active processing and reasoning, not the passive memorization of facts. Thus, in Accountable Talk, students and teachers are dedicated to pushing their limits of understanding and to improving their knowledge through reasoning and exploration.

Application in practice

- **Provide students with cognitively demanding tasks.** Teachers should develop discussion tasks that ask students to reason, explain, and elaborate on their thinking— the cognitive processes that support knowledge building. These tasks will be complex and open-ended (involving questions without a single, right answer), offering students opportunities to contribute and collaborate in order to solve problems.
- **Ask open-ended questions.** Open-ended questions encourage student engagement and talk. However, teachers must have an end goal in mind in order to guide the discussion toward canonically correct knowledge rather than misconceptions. It is important for teachers to carefully think through the discussion and the directions it might take. For example, a teacher can prepare scenarios, prompts, and conceptual diagrams of the target concepts (and misconceptions). There is a delicate balance between letting

students conduct the discussion and shaping their thinking toward a certain endpoint.

- **Anticipate misconceptions.** Teachers should acquaint themselves with common misconceptions students have about a topic in order to direct students toward clear conceptual understanding. Anticipating misconceptions also helps teachers guess at the meaning when a student's statement is incomplete or not fully comprehensible (and then probe accordingly), and to identify misconceptions that are worthy of mulling over together.
- **Provide knowledge resources.** Make sure that students know where to find facts and other kinds of information they need to intelligibly formulate their claims (essays, text, data). Ask students, where did you find that information? Ask students to justify their answers, and to explain what they based their answers on.

Suggested readings: Resnick, 1987; Bransford, Brown, & Cocking, 2000; Ford & Forman, 2015; Stein et al., 1996.

7.
Accountability to knowledge: Disciplinary knowledge

Students learn to argue in ways that are unique to each discipline.

Research findings

Students should not only come to know an accepted body of knowledge in each subject, but they should also develop some understanding of how these bodies of knowledge came to be established. For example, in all of the sciences, argumentation is one of the central means through which practitioners test new ideas and theories. Without argument and evaluation, the construction of reliable knowledge in the sciences would be impossible. Just as the science student must learn how to support a hypothesis with empirical data, a student of history should practice explaining and interpreting historical events from multiple sources of evidence. Because each discipline has its own genre of talk and criteria for evaluating sound arguments, students need opportunities to observe and practice these various forms.

Application in practice

- **Model how valid arguments are made in a discipline.** The types of evidence that are appropriate in a given discipline take different forms; for example, proof in a mathematics class, experiment in a science class, or references to the text in a literature class.
- **Show students how to look for appropriate resources that could serve as valid evidence in a particular discipline.** Ask them to justify their sources of information based on the criteria for evidence. For example, a personal letter might serve as evidence in a history class but might not count as evidence in a science class.
- **Provide students with authentic tasks.** Tasks should pose genuine problems in the relevant discipline or mimic a genuine problem within that discipline. For example, in a science class, students could critique their classmates' presentations using rules for what counts as evidence.
- **Provide knowledge resources.** Make sure that students know where to find facts and other kinds of information they need to intelligibly formulate their claims (essays, text, data). Ask students, where did you find that information? Ask students to justify their answers, and to explain what they based their answers on.

Suggested readings: Osborne, 2010; Latour & Woolgar, 1979; Ford & Forman, 2015.

8.
Formats for classroom dialogue

Teachers choose discussion formats to fit discussion goals.

Research findings

Researchers have studied classroom dialogue in a variety of formats, most prominently teacher-led classroom dialogue, small-group discussions, partner talk, and computer-mediated discussions. Each has advantages and disadvantages for certain teaching and learning purposes and in particular physical settings.

In **teacher-led classroom dialogue,** the teacher guides a discussion in which all students in a classroom are invited to participate. He or she usually allocates turns to specific students, students raise their hands before speaking, and only one person can talk at a time (whether teacher or student). The teacher guides the content of the discussion by probing student answers, commenting, adding information, clarifying, verifying, and encouraging participation. The advantage of this format is that the teacher guides students through the knowledge domain and orchestrates the social interaction. However, only one person can speak at a time, which may lead to low participation rates.

In **small-group, student-led discussions,** the teacher divides students into groups of about 3–6 to discuss an assigned topic. Group composition may be based heterogeneously or homogenously on academic competence, on gender, on students' social status, or on any other characteristic that is considered important by the teacher. Typically, the teacher makes rounds to monitor each group's progress and, when needed, to offer support. Research shows that effective teacher support during small-group discussion hinges on a careful appraisal of the group's and each individual's need for cognitive support, as well as of group functioning and interpersonal processes. Compared to teacher-led classroom dialogue, small-group peer discussions have more student-generated explanations and reasoning, and more student participation overall. However, since students are still developing their discussion and collaboration competencies, the quality of the dialogue may not be as high. A few students may dominate the discussion. The quality and productivity of peer-led, small-group discussion may be enhanced by giving students support tools that regulate their behavior during the collaborative interaction (see principle 2).

In **partner talk,** the teacher poses a question and asks students to discuss it for a few minutes with the person sitting next to him or her.

After that, the teacher asks single members of the pairs to share what they discussed. The advantage of this format is that it combines teacher-led classroom dialogue with episodes in which all students—not just a few—can think about, generate solutions, and engage in discussion on selected key issues. The disadvantage is that partner talk typically is brief.

Computer-mediated talk can take place in students' homes or in the classroom. Some students may feel more comfortable participating online than in face-to-face interactions. Textual online dialogue invites reflection, and online dialogue stays on-topic more often than in face-to-face discussion. However, the online format may also dampen engagement and motivation. When there is a time lag between communications, the nature of the dialogue may change. Technology companies are continuously developing new tools for online communication, each tool offering specific possibilities for different types of interaction. For this reason, teachers should carefully choose the online communication tool, depending on their goals for the discussion. For example, synchronous CHAT discussions are best conducted in groups of 4–6 participants, where students can immediately—and together—react, share, and reach a conclusion. Asynchronous forum boards may be appropriate when the main goal is to share and reflect on a range of different student solutions.

Suggested readings: Asterhan, 2015; Webb, 2009; Michaels, O'Connor, Williams-Hall & Resnick, 2010.

Conclusion

Classroom talk is an opportunity that can be used to far better purpose in most schools across the world. Virtually all students can be prepared to participate in challenging discussions.

In Accountable Talk classrooms, the ideas of every learner matter. The process of understanding is seen as a collaborative endeavor. The discussion space can and does contain errors, disagreements, incomplete statements, and ideas expressed in students' informal languages. These are all seen as contributions to the learning process. The talk searches for truth; its purpose is not merely to allow everyone to be heard, or to identify a debate winner. Because the goal is a fully developed solution, conclusion, or explanation for the problem at hand, participants must back up their statements with facts and evidence. Resources, including a teacher knowledgeable about the subject, are available in the classroom. Talk is about genuine questions and problems that ask students to look beyond surface explanations. It takes place in partner, small-group, whole-class, and online formats.

Ultimately, through participating in Accountable Talk, students learn to reason their way toward understanding. Reasoning—processing, interpreting, and being able to do something new with information—is the way we solve problems in the adult world. Instead of passively allowing some students to learn these skills by accident, schools can teach them deliberately, by changing the way talk occurs in the classroom.

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