Developing Speaking and Listening Skills in Mathematics

Terry Roberts and Laura Billings, director and associate director, respectively, of the National Paideia Center in Chapel Hill, North Carolina, state the importance of speaking and listening in an article in Educational Leadership (2008): “Both speaking and listening are forms of thinking because they allow a nascent thought to be refined through conversation. The better a student’s verbal communication skills, the more quickly his or her thoughts about a complex topic gain clarity and coherence” (p. 3). In other words, we learn to think when we speak, and we learn to think when we listen.

The CCSS expect that students gain, evaluate, and present increasingly complex information, ideas, and evidence through listening and speaking as well as through media (CCSSI, 2010).

Common Core State Standards: Speaking and Listening

According to the CCSS, speaking and listening includes two main domains:

- The ability to comprehend and collaborate with others:
  - participation in discussions and projects
  - evaluation of a variety of information from various sources, including media
  - evaluation of what a speaker says

- Skills in the presentation of knowledge and ideas:
  - audience-appropriate and logical presentation of information
  - use of media support
  - adaptation of speech to context and task
The Common Core State Standards emphasize the importance of engaging students in academic discussions in a variety of group settings—whole class, small group, and one on one. Some of these discussions take the form of formal presentations, but many are the more informal discussions that reflect real life, where students collaborate to answer questions, build understanding, and solve problems (CCSSI, 2010).

This kind of collaboration involves responding, respecting others’ views, listening, researching ahead of time, coming prepared, challenging each other, asking questions, problem solving as a group, reviewing ideas, and more.

**Strategies for Speaking and Listening in Mathematics**

Collaboration is one of the most important aspects of the speaking and listening standards in large part because it reflects how things happen in the real world. Seldom does a professional work in complete isolation. The very best ideas and inventions come from the confluence of various minds coming together to work on a problem. Therefore, group work, either in pairs, small groups, or large groups, should be part of any classroom.

Take a look at several specific ways you might promote listening and speaking skills in your classroom.

**Pairs Read**

This collaborative activity helps students to improve their comprehension of a text by both reading it aloud and hearing it. Divide students into pairs—with one student acting as a coach and the other as the reader—and provide them with a passage to read. The reader reads the first section aloud. Then the coach summarizes the main idea and supporting details. Next, the coach asks the reader any clarifying questions. Then the students reverse roles and continue reading. When they have finished, the pair summarizes the main idea and supporting details for the entire passage.
Open Questions

Just as in other subject areas, it is important to generate questions and discussion in the math classroom. One way to do this is to ask “open” rather than “closed” questions. In a closed question, there is usually only one answer, given by one student. The question does not foster discussion or debate. For example, a closed question might be *Which of these shapes is a hexagon?*

In open questions, discussion is generated because there are a variety of answers, more students can respond (and at different levels), students can work with others to talk about their ideas, and students must use critical thinking skills. For example, an open question might be *How can we be sure that this is a hexagon?*

In open questions, the discussion is as important as the answer.

Small-Group Problem Solving

In small groups, give students a scenario in which they have to determine how to solve a problem. For example, have students imagine that they are living in the Roman Empire. They are responsible for planning the road system to cover the empire. Have students work together to determine how they will find out how many miles to cover, what materials will be needed, and so on.

Debating

At any grade level, students can participate in debates that will enhance their critical thinking skills. Choose a topic that forces students to think critically and is debatable. For example, this can be done by presenting a math problem and a variety of strategies for solving that problem.

In small groups, students determine which strategy is the best and why. They must present their position with evidence and support. Students then orally debate as teams. Finally, have students discuss what they noticed or learned from the debate.
Guest Speakers

To expand math students’ understanding of what math really is, and to improve their speaking and listening skills, invite a mathematician or an engineer to come to the classroom and talk about all the ways that he or she “uses” math. Invite students to have a question-and-answer session with the guest.

Conclusion

As you consider the language, speaking, and listening standards in your own classroom, keep in mind their integrated nature. Together, these skills, along with reading and writing, build literacy and complex reasoning skills in the math classroom.