Assessment

Walking Around: Getting More from Informal Assessment

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AS A TEACHER, YOU ARE ALWAYS ASsessing your students. You walk around as they work on tasks or projects, observing groups, conversing with students, spot-teaching concepts and skills, and checking for understanding. This article describes similar work done through the Middle School Math through Applications Project (MMAP)—a comprehensive, project-based middle school mathematics curriculum project funded by the National Science Foundation. Its units are based on engaging scenarios in which students take the role of such mathematics-using professionals as architects, biologists, and cartographers. We asked ourselves, "How can we organize this natural process to make better use of the precious information we get through informal contact with students?" We discuss some valuable techniques that MMAP teachers and researchers developed for organizing informal assessment so that it produces a coherent story of student progress; helps students make more progress with greater focus; and complements other types of embedded assessments, such as journal writing.

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Why We Walk Around

TEACHERS WALK AROUND, OBSERVING AND talking with students, for many reasons; making sure that students are doing what they are supposed to is just one of these reasons. Walking around is the most immediate, efficient assessment method that we have available to us. It lets us find out where students are *today* and remedy developing problems on the spot. With other assessment methods, such as writing or quizzes, feedback is at least twenty-four hours away, and the next bit of information about students is probably another twenty-four hours after that. Walking around, we can quickly zero in on students' problems.

For example, in one of our classes, a teacher looked at the floor plans that students had drawn for an Antarctic research station, the design task from the MMAP unit "The Antarctica Project." To her dismay, everyone had drawn enormous rooms and furniture. She saw many four-meter beds and twenty-meter living rooms. The next day, she visited each group. She asked them to tell her about the size of the items in their scale drawings. As she talked with each group, she found that some students had confused meters with feet and were consistently drawing everything three times larger than they had intended. Other groups were not focusing on scale or measurement at all. Instead, they were drawing attractive floor plans in which the rooms and furniture were in proper proportion but were large enough to reveal clearly the details of the design. She was able to approach each group, find out what group members' misunderstandings were, and within a few minutes ask enough questions to guide them to the proper next steps. As she left each group, she asked its members to write down the steps that they had agreed on. She met with each group again two class periods later and used those notes to ensure that the steps had been taken and had been effective. The walk-around process helped her make sure that students achieved the mathematical goals that were embedded in the project.

Types of Walk-Around Assessment

AS YOU WALK AROUND YOUR CLASSROOM watching groups work, you can either *observe,* that is, watch a group working without interfering, or *conference,* that is, actively engage group members in conversation. You will probably find both techniques useful. In addition, many of the conversations that you have with students probably happen when a student approaches you with a question or problem.

Observations

Teachers commonly tour the classroom, observing each group working for maybe half a minute—just long enough to verify that the group is on task and is not having major difficulties with the work. Short observations are essential, but they do not supply much information about group processes or mathematics understanding. So in addition to quick observations, bring your chair and consider watching a group work for ten minutes or more. In this way, you can get a much better idea of the issues they are confronting; their group processes, mathematical and social; their mathematical strengths; and the help they need. The on-the-spot assessment chart shown in **figure 1** can help you organize your observations and connect them to mathematics topics. After the observation, take time to review with the group what you noticed, discuss problems, and point students to resources that they might find useful.

Observing every group regularly can help ensure that you do not lose track of anyone. It also solves one problem with group work: How do you know who does what? Most students can maintain a role just for show for half a minute, but few students can sustain this role for ten or fifteen minutes at a time.

For example, one teacher had a parent complain that his child, Eric, was having to do all the work for his group. The teacher observed the group the next day for ten minutes as students worked on some short problems. At first she thought that the parent was correct: Eric read the first problem, proposed a

On-the-Spot Assessment Chart for Group 3

Things to Look For	What I Saw
Math concepts Functions Inverse Relationships	Jenna K. explained to Hector why a bigger x means a smaller y. Hector used her explanation to choose the best value. I think they both get it!
Math tools/techniques Graphing	They don't bother to label axes and give the graph a title—design an activity to make it clear why this is important?
Problem solving/ reasoning	They talk in shorthand and don't explain their thinking very deeply, so it is hard to see their process. Practice this as a whole class? Marcus did make a good guess about how to choose values, but the others didn't take it up.
Communication and collaboration	Jenna tended to do everything herself. Marcus seems to get lost in the shuffle, but he has good ideas when he can get a word in.

Fig. 1 Sample on-the-spot assessment chart for observations

solution, and wrote the solution down. The other students wrote his answer on their papers. But as she watched, she saw that the situation was more complicated. When other group members proposed solutions, Eric usually either dismissed them arrogantly or restated them as his own idea. Sometimes the group was actually led astray because Eric was overly confident about an inaccurate solution. After the observation, the teacher used examples from what she had seen to give the group a short lesson and some guided practice in good listening behavior. She told the group that she expected to see good listening when she next observed them.

Conferences

Some teachers prefer to conduct more active meetings with students or groups. These meetings, or conferences, can be brief, three to five minutes, or longer if the discussion merits extending. It is important to talk to each group of students regularly, not just to the ones who seem to need help.

In a conference, ask students about particular aspects of their current work. You might decide on a topic by first observing or looking at their work so far, or you might approach the group with a pattern or characteristic that you want its members to notice. For example, you might ask them to explain how they used the scale markings on a blueprint to determine the actual size of a room. If they had not previously noticed the scale markings, such an approach could help them focus on the blueprint.

Making Notes and Creating Continuity

KEEPING TRACK OF ALL THESE CONVERSATIONS can help you remember the aspects of mathematics that are interesting or problematic for your students and decide what to do next. To make the most of walk-around assessment, you will want to create continuity from one session to the next. Many teachers like to leave a group with something specific to do: explore a problem, find out about a mathematics topic, or ask a peer for an explanation. Then, the next time they meet with or observe the same group, they can use their notes to measure progress.

A conversation record like that shown in **figure 2** can help you keep track of what happened and what you asked the group to do. Give one to each group or to each student, and staple it to the front of group folders or student notebooks as appropriate. At the end of each meeting, have students write down what you talked about and what you asked them to do. If a student approaches you with a question and displays some great mathematical thinking, you can tell her or him to make sure to put that insight in the conversation record, too.

Check off when you are satisfied with the student's or group's progress on an item. If you are not satisfied with the progress, make specific suggestions and have students add them to the conversation record.

Walking Around Equitably

HERE ARE SOME IDEAS FOR HELPING ALL YOUR students benefit from conferences and observations.

- Give everyone a chance to talk: One reason for organizing the walk-around process is to balance other forms of assessment. For example, if a student is having trouble communicating understanding in writing, he or she gets another chance to do it orally during a conference. Therefore, making sure that everyone has opportunities to talk is important. If one student in a group is consistently acting as the spokesperson, you are missing an opportunity to check the other students' understandings. One teacher we know rolls dice to choose the speaker.
- Provide examples: Some students have trouble explaining their ideas orally. Make sure that your students get to hear good student explanations regularly. For example, a student who

makes an articulate explanation one day might share it with the class the next day.
- Meet one on one: Even if you usually confer with groups, occasional one-on-one conferences can give you a chance to catch up with a student who seems lost in the shuffle.

Classroom Management

MANY TEACHERS, WHEN THEY FIRST BEGIN TO think seriously about tracking conferences and observations, worry about classroom management. "If I were to focus on one group for five or ten minutes, I'd have discipline problems popping up all over the room," worried one teacher.

This worry is usually confirmed when a teacher first starts holding conferences, because students are used to being more tightly monitored. However, teachers report that after a short time, discipline problems actually decrease for two important reasons. First, when students have customized guidance and concrete next steps, they find staying involved in their work much easier. Focused time with the teacher orients students to the interesting and challenging aspects of their work and motivates them to tackle something that at first seemed either uninteresting or insurmountable. The second reason for the decrease in discipline problems is accountability. When students know that the teacher is interested in their progress and will check back to see that the agreed-on steps have been taken, they work to make sure that they will be ready. Teachers find that making this accountability part of a participation grade helps initiate the process.

Management problems, however, will not all go away magically. Probably at first, lots of reminding will be needed: "OK, everyone, I'm trying to meet with group 3, and it's getting pretty noisy in here." One of our teachers pointed out that setting expectations is crucial. Once students realize that they are expected to respect their teacher's time with other groups, they will.

Integrating Walk-Arounds with Other Assessment Techniques

MAKING BETTER USE OF WALK-AROUND INFORmation does not negate the need for other assessment methods. If you give quizzes and tests, you will still want to give them; you will also continue with individual writing assignments, peer reviews, or portfolios. What the techniques in this article can do are (1) help you align these other assessments with your students' true accomplishments and needs, (2) help your students get more out of other assessments, and (3) help you make more efficient use of the time you spend assessing.

Conversation Record for Group 5

Date	Discussion Topics	Next Steps (✔)	Related Math Topics
10/29	Why guppy population was so low	Try adjusting death-rate Keep records of what numbers we try. What patterns do we see? ✔	functions, percents, patterns
10/30	Why our death rate is lower than the one in the Real-Life Data sheet	Write about justification for death rate and what our numbers mean in the real world (our guppies don't have predators).	functions

Fig. 2 Sample conversation record

For example, a teacher visits a group of four students that is having trouble deciding on an efficient shape for its floor plan—more area for a given perimeter. She tells each student to create and analyze three shapes for homework and to look for a pattern. The homework is an individual assessment that she can review later and gives each student analytical preparation for participating in group design decisions. The next day, the four students compare their homework. They make a decision and draw their new floor plan. The teacher visits them again; she checks off that three of the four students did the homework. She discusses their solutions and their new design with them, and she notes that even the student who did not do the homework is able to participate in the discussion. She asks the group to report its solution and process to the class at the end of the period. In two days she has used conferences in combination with two other assessments: writing and presentations. She did not have to correct homework after school. The students got a timely solution to their problem, had a chance to experience the power of mathematics to solve a design problem, and shared their solution with the rest of the class. Walk-arounds allowed a lot to be accomplished for a relatively small investment of focused teacher time.

The teachers in the MMAP project who helped develop these methods have found that focused walking around adds immeasurably to the sense of keeping up with students' varied progress and needs. This knowledge is especially important in longer projects, in which students' needs tend to diverge more and more as time goes on. Helping everyone delve even more deeply into the mathematics becomes much easier when day-to-day informal assessment becomes integrated into the instructional process. ▲