



## Using Data to Guide Instruction

By Amanda Hankel

With the increasingly limited time and resources for many teachers in K-12 education today, it can be difficult to collect and interpret data in a meaningful way to guide instruction.

According to Becky Martin, continuous improvement and professional development facilitator at Cedar Rapids Community Schools in Cedar Rapids, IA, using data to guide instruction ensures all students master the learning targets—topics and materials that have been identified as necessary for them to learn. This idea stems from four basic questions of a professional learning community:

1. What do we want all students to learn, know or be able to do?
2. How do we know if they have learned? What evidence do we have of the learning?
3. How do we respond when students struggle or fail?
4. How do we respond if they have already learned?

By collecting and interpreting the correct data, teachers can answer these questions about the students in class. The difficulty, as Martin explained, is that teachers often haven't determined the level of mastery that they expect from their students.

"We haven't always allowed teachers the time to sit down and really discuss and describe what proficiency looks like along with determine the criteria for proficiency," Martin said. "Sometimes, we get so involved in the activities and assignments we ask students to do that we forget what we want them to learn, know or be able to do."

To better use data at Cedar Rapids Community Schools, the district began using a process to analyze in-process/formative data to identify learner needs and inform instruction. The process is adapted from the Analyzing Student Work Template from the [New Teacher Center](#) at the University of California-Santa Cruz. Since piloting the process in select elementary schools in 2008 and moving to full implementation in all elementary schools in 2009, the district has seen tremendous growth. In 2011, the average rate of growth for students in grades three, four and five has been between a year-and-a-half to two years, according to a district data analysis using the National Grade Equivalency with the state's Iowa Test of Basic Skills for grades K-8.

## Setting the standard

Traditionally, a teacher may use a textbook to determine what is important and to determine the essential learning outcomes, Martin said. Instead, the first step should be deciding what each and every student needs to learn, know and be able to do. Teachers, then, select a specific learning target and do a cross-walk with the curriculum materials to locate appropriate teaching strategies. Doing this, a teacher can collect pertinent data to gauge where students are in the learning process and what needs to be done to get them there based on identified learning targets.

“If you haven’t gone through that process of actually identifying specific targets that you want students to be proficient in, you end up collecting all kinds of data that doesn’t mean anything,” Martin said.

To illustrate, Martin offered an example in the subject of language arts:

“If I want a seventh-grade student to write a paragraph with a good topic sentence, supporting details and a concluding statement, I need to define each component of a good paragraph, and describe it for the student and for myself,” she said. “If I don’t provide a clear example or description of mastery for the components, the student can’t hit that target.”

After identifying the learning target or objective for the students, Martin said it is beneficial for teachers to spend time collaborating with a team of other teachers to determine what mastery will look like for the learning objective. From there, teachers should scaffold skills. Again, the paragraph example from a language arts class illustrated the idea of scaffolding:

“If my learning target is for students to write a quality descriptive paragraph, what are all the things they need to know?” Martin said. “I need to scaffold the underlying skills required to complete the paragraph. I also need to know the criteria that will determine mastery for each component. This process is also called unpacking or unwrapping the standard.

“They need to know how to write a quality topic sentence. They need to know how to include supporting details. They need to know the elements of a concluding statement. And students will need to be selective with word choice and descriptive words in the writing. If all of this is in place, I can align my in-process/formative measure to the outlined criteria and collect the appropriate information to determine student progress.”

## Putting data to use

After teachers have met to determine learning objectives, proficiency has been determined and defined, and skills have been scaffolded, the process of data collection and analysis—analyzing in-process student work to form assessments leading to better instruction—truly begins. Martin outlined the steps in the process used at Cedar Rapids Community Schools:

**Step one: Teach and administer assessment.** In this step, determine the student learning objective and identify the research-based best-practice teaching strategy. Teach the lesson, assess the learning and gather the results from an ungraded, formative assessment.

**Step two: Analyze and determine patterns.** Gather the formative assessments and identify key trends in the group of assignments. What are the students excelling at and struggling with as a group? Try to connect those patterns to the teaching strategies used.

**Step three: Sort and analyze.** Sort the assessments into four groups based on the criteria established earlier for determining proficiency? The four groups are above proficient, proficient, almost proficient and far below proficiency. We begin with the group that has reached proficiency:

1. Who has met the expected criteria?
2. Who almost has met it?
3. Who is lost?
4. Who is beyond what is expected?

**Step four: Identify key qualities.** For each group, what are the students able to do based on their performance in the assessment?

**Step five: Identify learning needs.** For each group, where are the gaps in the learning? What do the students need to work on?

**Step six: Determine differentiated instruction needs.** Identify teaching strategies for each group to get them to where they need to be. This could mean practice assessments for the group that doesn't quite grasp the concept yet or enrichment activities for the students who are already beyond where they need to be.

**Step seven: Assess again.** Give students another assessment to gauge progress toward the specific learning target.

## **Breaking from tradition**

“In past practice, we’ve done the same reteaching for everybody,” Martin said. “We look at papers and say, ‘A lot of the students are missing this particular skill, so I’ll reteach it to everybody.’ In reality, not everybody may need additional time with the same skill.”

Using in-process/formative data analysis, students benefit by having the opportunity to learn things they didn’t understand before the final assessment and additional practice can be targeted to their needs. Meanwhile, teachers benefit by having clear criteria to inform instruction and reach all students.

“There is a protocol for using the data so teachers are collecting targeted pieces of student work that will tell them where the student is in the learning progression,” Martin said.

Overall, using data to inform instruction comes down to viewing learning as a continuum and providing opportunities for students to practice without penalty. Learning occurs when students are provided with specific learning targets and pertinent data is collected and analyzed to determine learning needs, provide specific feedback to the student and adjust teaching strategies. When students can identify their strengths and areas for improvement, it encourages continual learning and improvement, Martin said.

“It’s a learning progression,” Martin said. “Here is where you need to be. Here is where you are now. Here is how you are going to get there. We need to continually look at the continuum of learning to improve the quality of what our students are doing.”