Feedback and Feed Forward

Giving specific, constructive feedback to individual students yields deeper understanding, and using student data to look for patterns across students allows teachers to make good instructional decisions.

By Nancy Frey and Douglas Fisher

Nancy Frey (nfrey@mail.sdsu.edu) is a professor of teacher education at San Diego State University and a teacher leader at Health Sciences High and Middle College in San Diego, CA.

Douglas Fisher (dfisher@mail.sdsu.edu) is a professor of teacher education at San Diego State University and a teacher leader at Health Sciences High and Middle College.

They are the authors of Guided Instruction: How to Develop Confident and Successful Learners (2010, ASCD).

Internet searches often yield surprising results. In preparation for writing this column, we searched one of our favorite sayings: “You can’t fatten sheep by weighing them.” One of the results was an article from the April 1908 issue of the Farm Journal on early spring lambs. Among the advice to sheep farmers was to take care in apportioning their rations so as not to overfeed, to provide healthy living conditions so they can grow, and to take careful measure of their progress—and this piece of wisdom: “Study your sheep and know them not only as a flock but separately, and remember that they have an individuality as surely as your horse or cow” (Brick, 1908, p. 154).

Students are not sheep, of course, but our role as cultivators of young people has much in common with that of livestock farmers. As educators, we recognize the importance of a healthy learning climate and seek to create one each day. In addition, we apportion information so that students can act upon their growing knowledge. And we measure their progress regularly to see whether they are making expected gains. As part of effective practice, teachers routinely check for understanding through the learning process. This is most commonly accomplished by asking questions, analyzing tasks, and administering low-stakes quizzes to measure the extent to which students are acquiring new information and skills. But it’s one thing to gather information (we’re good at that); it’s another thing to respond in meaningful ways and then plan for subsequent instruction.

Without processes to provide students with solid feedback that yields deeper understanding, checking for understanding devolves into a game of “guess what’s in the teacher’s brain.” And without ways to look for patterns across students, formative assessments become a frustrating academic exercise. Knowing both the flock and the individuals in it are essential practices for cultivating learning.

Knowing the Individual: Effective Feedback

Most of us have received poor feedback: The teacher who scrawled “rewrite this” in the margin of an essay we wrote. The coach who said, “No, you’re doing it wrong; keep practicing.” The coworker who took over a task and did it for us when our progress stalled. The frustration on the learner’s part matches that felt by the teacher, the coach, or the coworker: why can’t he or she get this? That shared vexation produces a mutual sense of defeat. On the part of the learner, the internal dialogue becomes, “I can’t do this.” The teacher thinks, “I can’t teach this.” Over time, blame sets in, and the student and the teacher begin to find fault with each other.

Hattie and Timperley (2007) wrote about feedback across four dimensions: “Feedback about the task (FT), about the processing of the task (FP), about self-regulation (FR), and about the self as a person (FS)” (p. 90). For example, “You need to put a semicolon in this sentence” (FT) has limited usefulness and is not usually generalized to other tasks. On the other hand, “Make sure that your sentences have noun-verb agreements because it’s going make it easier for the reader to understand your argument” (FP) gives feedback information about a writing convention necessary in all essays. The researchers go on to note that feedback that moves from
information about the process to information about self-regulation is the best of all: “Try reading some of your sentences aloud so you can hear when you have and don’t have noun-verb agreement.” The researchers go on to say that FS ("You’re a good writer") is the least useful, even when it is positive in nature, because it doesn’t add anything to one’s learning.

Done carefully, FT can have a modest amount of usefulness, as when editing a paper. Yet feedback about the task is by far the most common kind we offer. The problem is that the task offers only end-game analysis and leaves the learner with little direction on what to do, particularly when there isn’t any recourse to make changes. Most writing teachers will tell you that it is not uncommon for students to engage in limited revision, confined to the specific items listed in the teacher feedback—more recopying than revising. But feedback about the processes used in the task and further advice about one’s self-regulatory strategies to make revisions can leave the learner with a plan for next steps.

Consider the dialogue between English teacher John Goodwin and Alicia, a student in his class. Alicia has drafted an essay on bullying, and Goodwin is providing feedback about her work. Careful to frame his feedback so that it can result in a plan for revision, he draws her attention to her thesis statement and says, "It’s helpful for writers to go back to the main point of the essay and read to see if the evidence is there. I highlight in yellow so I can see if I’ve done that." The two of them reread her first three paragraphs and highlight where she has provided national statistics and direct quotes from teachers she knows.

Goodwin goes on to say, "Now what I want you to do is look for ways you’ve provided supporting evidence, like citing sources. Let’s highlight those in green." Alicia quickly notices that while she has made claims, she hasn’t capitalized on any authoritative sources. And by confining her direct quotes to teachers at her school, she has limited the impact of her essay by failing to quote more widely known sources. The little bit of green on her essay illustrates what she needs to do next: strengthen her sources. Goodwin ends the conversation by saying, "It sounds like you have a plan for revising the content. Let’s meet again on Wednesday and you can update me on your progress.”

Feedback of this kind takes only a few minutes, yet it can add up in a crowded classroom. For this reason, many teachers rely on written forms of feedback instead of direct conversations. Even in written form, the guidelines about feedback remain the same: focus on the processes needed for the task, move to information about behaviors within the student’s influence to make changes, and steer clear of comments that are either too global or too minute to be of much use. Wiggins (1998) advises constructing written feedback so that it meets four important criteria: first, it must be timely so that it is paired as closely as possible with the attempt; second, it should be specific in nature; third, it should be written in a manner that it understandable to the student; and fourth, it should be actionable so that the learner can make revisions.

**Knowing the Flock: Feed Forward**

Although feedback is primarily at the individual level, feed forward describes the process of making instructional
decisions about what should happen next (Frey & Fisher, in press). Data about student progress is commonly gathered using common formative assessments, either commercially produced or made by the teacher. In addition, many school teams engage in consensus scoring with colleagues to calibrate practices, especially with tasks that have a significant qualitative component, such as writing (Fisher, Frey, Farnan, Fearn, & Petersen, 2004). Lack of time to work with other colleagues can limit these practices, however. The good news is that a teacher's own classroom can serve as the unit of analysis as well.

With all the solid feedback provided to students, it seems natural to take it one step further by recording results and doing some pattern analysis. For example, mathematics teacher Ben Teichman keeps track of student progress across several dimensions of instruction. As he provides written or verbal feedback to his students, he notes which skills they have mastered and which ones are still proving difficult for them. His error analysis record sheet enables him to make decisions about who needs reteaching and when it needs to occur. (See figure 1.) “All the feedback in the world isn’t going to do much good if what they really need is more instruction,” said Teichman, an insight Hattie and Timperley (2007) share.

Unlike a checklist to track mastery, Teichman’s error analysis sheet is used to identify the students who are struggling. He logs the initials of students in each period who are still having difficulty with major concepts after initial instruction, then makes decisions about follow up and reteaching. For example, the error analysis sheet

<table>
<thead>
<tr>
<th></th>
<th>Period 1</th>
<th>Period 2</th>
<th>Period 3</th>
<th>Period 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can explain what an imaginary number is, and can contrast it with real numbers</td>
<td>SS, LH</td>
<td></td>
<td>YV</td>
<td>HG, FR, SL, VG, CC, KY, SD, KJ, NJ, FE, HU, YS</td>
</tr>
<tr>
<td>Can reduce imaginary numbers to their simplest radical form</td>
<td>RA, EO, LH</td>
<td>OJ, IH, SR, MM,</td>
<td>RC, NS, SA, JC, SZ</td>
<td>KL, DR, SD, CG, OG, QE, WN, RT, JK, FT, PD, NM, ER</td>
</tr>
<tr>
<td>Can cite at least two applications for imaginary numbers</td>
<td>OS, SM, VR, EO, LH</td>
<td>IH, SR, RD, MM</td>
<td>NS, JC, SZ</td>
<td>BB, QE</td>
</tr>
<tr>
<td>Understands the relationship between Cartesian, polar, and exponential forms (Euler’s formula) of representation for imaginary numbers</td>
<td>JV, EO, KL, KD, NO, TO, MA, LH, VZ, UC, AZ</td>
<td>PL, GT, DM, SS, WB, CJ, LI, NH, RR, PF, DE, WR</td>
<td>NS, NH, CC, GT, JO, DD, SZ, WK, FL, BB, TR, FD, BH</td>
<td>HG, FD, LK, VL, NK, DZ, SW, RY, HU, QE</td>
</tr>
</tbody>
</table>

Figure 1

Error Analysis Sheet in Algebra II: Introduction to Complex Numbers

Teachers can use an error analysis sheet to record the initials of students who have not mastered instructional goals.
shows that all of his classes are still having difficulty with understanding the relationship between different forms of representing imaginary numbers. That tells him that reteaching to the whole group is in order. On the other hand, smaller groups of students are having trouble with other concepts. “I need to pull those students into small groups, because the majority of the class is doing fine otherwise,” he said. Fourth period is another story. “I've got lots of students all across the board who are struggling with this whole unit,” he said. “Time for me to take a few steps back and revisit what they know already about radicals before we dive back into imaginary numbers.”

You can watch Teichman teach and discuss his assessment practices at www.nassp.org/pl0511fisher.

Conclusion
"To be successful, [the sheep farmer] must also be gentle, with a watchful eye for little things...and a hundred minor details upon which success depends,” wrote Brick (1908, p. 154) more than a century ago. Feedback and feed-forward processes in the classroom should be used to cultivate learning, and not just simply measure it. By providing students with feedback they can use to revise and by tracking student progress to determine who needs subsequent instruction and when it should occur, educators can ensure that they feed and not merely weigh. PL.

REFERENCES