What to Do When Students Make Mistakes

Students make mistakes, even during carefully planned lessons using well-designed instructional materials. They answer incorrectly, give incomplete answers, or do not respond at all. The importance of providing feedback when students make errors is well documented (e.g., Brophy, 1986; Christenson, Ysseldyke, & Thurlow, 1989). Nevertheless, relatively little experimental research on error correction exists, and what does exist is inconclusive. Teachers are left knowing the importance of correcting student errors but receiving little empirically supported guidance for how to do so.

Don't Let Students Practice Errors during the Acquisition Stage of Learning

Students learn by doing, but if errors are repeated, they may be learning how to perform skills incorrectly. Students learn better by “doing with feedback.” The biggest problem with delayed feedback is that it allows students to practice errors (Van Houten, 1984). Practicing errors also wastes valuable instructional time because of the reteaching and relearning that eventually must take place.

Most errors are made during the acquisition stage of learning, when the student is learning how to perform a new skill or to remember and use new knowledge correctly. It is important that feedback be provided before the student is required to use the skill/knowledge again. Feedback should be qualitative, focusing on the accuracy of the student’s response. For example: “Excellent, Robin. You removed all of the leaves with dark spots. But there’s still too much sand on them to serve to our customers. Let me show you again how to wash it off. Then you can show me.”

For behaviors that produce a permanent product (e.g., a completed workbook page, a sanded piece of wood), it is usually not critical that feedback occur within a few seconds or minutes of a student’s response. Feedback received even a day or two later may still be helpful as long as it occurs before the student must respond again.

Teachers can ensure that students receive feedback after each response by using instructional strategies such as these:

- **Collaborative learning.** Use a peer tutoring system or small-group activities in which peers provide feedback to one another after each response (Miller, Barbetta, & Heron, 1994).
- **Learning centers.** Use instructional materials and computer software that provide feedback after each response.
- **Self-correction.** Teach students to self-score their work and self-correct any errors before proceeding to the next problem or item (Goddard & Heron, 1998; Morten, Heward, & Alber, 1998).
- **Homework.** Avoid assigning homework or independent seatwork activities that do not contain self-scoring and self-correcting components until the student can perform the target skill with some accuracy.

When Errors Occur, Provide Effective and Efficient Error Correction

When handled properly, errors can provide good opportunities for teaching and learning. But too often error correction is carried out ineffectively (the student is still wrong the next time) and inefficiently (it is time-consuming and reduces the total number of learning trials that can be conducted during the lesson). Although much remains to be learned about how teachers should respond when students make mistakes during instruction, the combined results of several experimental studies provide some guidance. Research suggests that error correction will be more effective and efficient when it includes these four characteristics:

- **Now Instead of Later.** Errors should be corrected before going to the next item or problem. Teachers may hesitate to delay instruction when a student errs during group instruction, preferring instead to work individually with her after the lesson. But this may allow the student to make the same mistake for the rest of the lesson. Two recent studies compared “right now” and “end-of-the-lesson” error correction during sight-word lessons with primary students with mental retardation and science vocabulary
lessons with upper elementary-age students with learning disabilities. Error correction immediately after each error was more effective, even when the postlesson error correction consisted of repeated trials (Barbetta, Heward, Bradley, & Miller, 1994; Kleinman et al., 1994).

Direct. Error correction is direct when the feedback focuses on the target skill. Several studies have shown that the effectiveness of error correction is improved when students are provided with complete information or a direct model of the missed item (Barbetta, Heward, & Bradley, 1993; Espin & Deno, 1989). That is, instead of offering incomplete or indirect feedback, tell, show, and/or guide the student through the correct response.

Brief. The teacher should rapidly tell, show, and/or demonstrate the correct response (e.g., “This word is ‘circus.’”). Correcting an error in 3 or 4 seconds is better than engaging in an extended discussion of the student’s mistake. In trying to help students understand their error, teachers often spend a great deal of time talking. Although detailed explanations are sometimes necessary and helpful, often students just get confused or lose interest. Time would be better used conducting several more complete learning trials.

Ends with the Student Making the Correct Response. When a student errs, teachers often hint, probe, tell, show, and eventually provide the correct response or ask another student to answer. The student who made the original error passively observes. Results from several studies show that feedback is more effective when the student who erred is given an opportunity to emit the corrected response (Barbetta & Heward, 1993; Dalrymple & Feldman, 1992; Drevno et al., 1994). For example, Barbetta, Heron, and Heward (1993) examined the effects of active student response during the correction of errors made by primary students with mental retardation during sight-word lessons. Half of each week’s set of 20 unknown words were taught with “no response” (NR) error correction (after each error, the teacher modeled the correct response while the student looked at the word); the remaining 10 words were taught with “active student response” (ASR) error correction (the student repeated the word after the teacher’s model). ASR error correction was more effective for all six children on all five measures of performance: number and percentage of correct responses during instruction, same-day tests, next-day tests (see Figure A), maintenance tests given 2 weeks after instruction, and words read in sentences.

The error correction episode should end with the student making the correct response. Instead of providing or showing the correct response and then asking the student, “Now do you understand?” have the student repeat the correct response (e.g., teacher: “No. This word is ‘circus.’” Student: “Circus.” Teacher: “Good.”).

Evaluate the Effects of Error Correction
As with any instructional technique, teachers should evaluate their error correction procedures. First, what is the procedure’s effectiveness in helping students respond correctly in the future? This can be directly and simply determined by observing how the student responds to the same item or task the next time it is presented. Second, how efficient are the error correction procedures? A complex, time-consuming procedure may be effective (the student responds correctly in the future) but inefficient because it limits the total number of learning trials during the lesson. Like most questions concerning effective instructional practices, the question of how error correction should be conducted is an empirical one. Its answer lies in student performance.