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What's the Hurry? Fluency in the Classroom

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In Precision Teaching, frequent measurements taken with curriculum-based instruments are summarized to illustrate trends in student learning. One of the basic elements of Precision Teaching is the use of rate data (number of responses per minute) to illustrate the fluency of a student's work. (Fluency may also be indicated by latency, the time between task presentation and the beginning of work; and duration, the time required to finish the task.) The use of rate data offers certain advantages and disadvantages that must be understood if teachers are to make good use of the technique.

There are several reasons why teachers should be interested in the fluency of student response regardless of their interest in Precision Teaching. The first of these is that rate, like accuracy, indicates how well a student knows or can do a task. If two students work a set of multiplication problems and one misses 20% while the other does not miss any, it is clear that the first student has less skill at multiplication than the second. That is because the first student is less accurate. Now imagine that two other students work the same problems and neither of them make an error. It is still possible to recognize the differences between these students by noting the rate at which they complete the problems. The student who can do more problems in less time, while maintaining accuracy, is better at multiplication. Rate, therefore, is sensitive to differences between students—and between repeated measures of the same student—that accuracy data alone will not show. Accuracy is essential, but it does not describe all dimensions of skill and knowledge. A student who is fluent is both accurate and quick. By collecting the rate of correct answers *and* errors, teachers are able examine both the accuracy and fluency of response.

A second argument for fluency that it has functional implications. Some things must be done quickly.

Finally, fluency is thought to be related to the eventual generalization and maintenance of skills (Ivarie, 1986; Liberty, Haring, White, & Billingsley, 1988). Several explanations for this relationship can be found in the current literature, including the idea that high levels of fluency allow students to become "automatic" (Phye & Andre, 1986). When a person is automatic in the use of a skill, he or she is not aware of its use. An example of automatic use can be found in your own reading of this article. While the reading process requires you to employ various phonic, semantic, and syntax skills, you are doing so without awareness of that use. This automaticity frees your working memory to consider the meaning of the text.

Fluency and Learning

While it may be clear that a student should work certain tasks quickly, what the student should be taught in order to obtain the fluency desired is not always as clear. Often there are many different ways to complete a task. For example, one student might be able to solve addition fact problems by counting on fingers, while a second student might supply equally accurate answers by rote. These different ways of doing tasks are referred to as *strategies;* they are the procedures for task completion that teachers teach to students (Scott, 1988).

Not all strategies can be used to complete tasks fluently, including many of those with which special educators are most familiar. Since special educators work with students who have difficulty learning, they tend to emphasize rational and ordered strategies for task comple

tion. (For an example, see Archer, 1988.) This emphasis is understandable because such strategies are excellent for developing accurate performance, but insistence on their continued use may inhibit the shift from accuracy to fluency. For example, teaching a student to substitute colored blocks for numbers may help the student become accurate at addition, but because the blocks are not transportable or efficient they must eventually be replaced. This does not mean that it was wrong to initially promote a strategy of counting blocks. It does mean that use of the blocks must eventually be replaced by a new strategy. One way to decide whether or not a strategy can be used fluently is to find out whether successful students use it.

Fluency and Teaching

While fluency building should be a natural extension of the earlier acquisition stage of instruction, it is important to understand the demands it places on teachers and students. Because most special education teachers are more familiar with building accuracy than fluency, it is convenient to relate fluency instruction to acquisition.

When teaching a student to be accurate at addition, the teacher explains how to work accurately, provides the student with elaborate demonstrations of how to add, guides the student through early practice in adding, uses extensive correction procedures when errors occur, and praises the student for increases in accuracy. However, the teacher does not push fluency when the student cannot yet work the problems accurately. Similarly, when teaching a student to be fluent, techniques used to promote accuracy are not used. During fluency instruction, elaborate explanations and corrections are not needed; in fact, they might even slow the student down. Instead, the teacher talks about and rewards fluency. This means fluency becomes as much the focus as the addition content. The shift, then, is not in content (e.g., from addition to multiplication) but in what the student is supposed to do with the content.

It is important to remember that fluency involves doing something quickly as well as correctly and to make this point clear while teaching and testing. For example, when giving daily tests or engaging in drill, teachers, should say, "I'm interested in seeing how quickly you can do these right," not "Go as fast as you can."

Fluency and Measurement

Two of the most common complaints about Precision Teaching are that it places too much emphasis on the use of drill and that it often targets isolated subskills. These complaints may arise from misconceptions promoted when observers (and, unfortunately, some precision teachers) confuse evaluation activities with instruction. The basic format of Precision Teaching is teach-measure-decide-teach-measure-decide (White, 1986; White & Haring, 1982). This process of frequent data collection and decision making has been shown to increase student achievement (Fuchs & Fuchs, 1986; Jones & Krouse, 1988). In a typical lesson a teacher might deliver instruction for 25 minutes and then follow the lesson with a 1- or 2-minute timing that directly samples the fluency of the skill being taught. If, over a period of sessions, these timings reveal a pattern of improved learning, the teacher decides to continue with the same instruction. If learning is not apparent, the teacher uses a set of data decision rules to modify the instruction (Eaton, 1978; Liberty, Haring, White, & Billingsley, 1988).

In order to focus the measurement used in this process, precision teachers often use tests that are different from the ones with which most teachers are familiar. These measures contain only the specific material being taught in the lesson (Howell, & Morehead, 1987). These very narrow tests (sometimes called *probes)* are given to measure, not to instruct.

Having students drill on timed worksheets is *not* Precision Teaching. The daily timings are not given to teach (although students often do learn from the experience). They are given to collect data on the effect of instruction. Precision Teaching specifies how the skill will be measured, how the learning will be summarized, how the instruction should be described, and how the instruction might be modified to improve its effectiveness. It does

not specify a type of instruction. Put more simply, advocates of Precision Teaching do not demand that all teachers teach the same way, but they do demand that teachers monitor what they are doing and change if necessary.

Teaching for Fluency

The first step in fluency instruction is deciding when to do it. If a teacher moves a student into fluency instruction while the student is inaccurate (as a general rule less than 85% [White, 1984]), the student may practice and become better at working incorrectly. However, if the student is accurate and the teacher does not begin fluency instruction, the student may get bored. While decision rules can help a teacher recognize when to shift from acquisition to fluency instruction, these risks can also be reduced by following the principles of effective instruction.

To clarify, it is a good idea to distinguish between *instruction* and *lesson.* Any lesson can include many different instruction actions. This means that a lesson designed to teach oral reading, for example, can include acquisition *and* fluency instruction, as well as generalization. The teacher effectiveness literature tells us that lessons should include components such as preview, explanation, guided practice, and independent practice (Rosenshine & Stevens, 1986). While fluency instruction typically involves rapid-paced independent practice, and practice is essential, it should only be one part of the lesson. Practice cannot replace the other elements of the lesson, and independent practice must always be preceded by adequate guided practice. The best way to ensure that fluency instruction is effective is to make sure that it is embedded within an adequate total lesson.

General Suggestions

First, be sure that all blocks to fluency, such as awkward materials, are removed. Second, remember that it is important to model, prompt, and praise fluency. Third, avoid competition among students. If the students want to race, have them try to beat their own previous score. Fourth, remember that fluency is built primarily through repetition, and that can be boring. Often, several short, intense sessions a day are better than one long one. Fifth, use peers and paraprofessionals to make the instruction efficient. Finally, be sure the rate criteria are appropriate.

Establishing standards of performance (criteria) is important because different levels of fluency lead to different levels of competence. While various procedures for establishing criteria have been recommended (see pages 64-66 in this issue), we believe that the best practice is to develop standards from the performance of successful students working in the target setting. This means that the exit criteria for third grade are the performance levels required for success in fourth grade. Similarly, the exit criteria for special classes are those required in regular classes. However, because these levels differ from one school to another, the following discussion will include general recommended criterion statements. We have taken these statements from what we believe to be the best current sources, but not all authors agree. Remember, when we talk about teaching students to be fluent we are *not* talking about having them go as fast as is humanly possible. Students need to be accurate and fluent enough to be successful.

Considering how hard it is for educators to set fluency criteria, it is not surprising that students have trouble conceptualizing them. Students are used to accuracy feedback, which typically comes when the items they have worked are marked right or wrong. This allows them to see the mistakes they make. When a student is working on fluency, no items are wrong; they are just late. Because there are no errors to mark, the student can have trouble understanding what is expected. Simply telling a student to go faster is too intangible. Therefore, it is a good idea to illustrate the fluency target in some way. If a page of problems or words is going to be used, circle the target. If flashcards are used, put a red card in the deck to mark the target. Charting performance is an excellent way to illustrate progress and show how much more improvement is needed.

Content Suggestions

Reading fluency is built most effectively with passage reading, not drill on words or sounds in isolation. Target rates of 60 words per minute (wpm) for first graders, 110 wpm for second graders, and 145+ wpm for students in third grade and above (all with 90 to 95% accuracy) are commonly recommended (Carnine, Silbert, & Kameenui 1990). Reading rate can also be increased by providing more silent reading practice (this does not mean cutting back on oral reading) and by reducing the corrections the teacher delivers when the student is reading. (Remember, if many corrections are needed, independent practice is not indicated.) It is also a good idea to start oral reading exercises with the teacher reading the first few sentences aloud.

Another technique is to have students do repeated readings of the same material (Allington, 1983). Have the student read through a passage and note his or her rate. Then determine what 40% of that rate is and add the two numbers together. This 40% improvement level becomes the target for the day. The student then rereads the passage as many times as needed until the target is met. This continues until the day that the student's initial reading rate is at target.

Mathematics facts can be practiced from timed worksheets and flashcards. The rate of response for written and oral facts is the same, approximately 40 facts per minute with 100% accuracy (Howell & Morehead, 1987). It is a good idea to select larger problems, recognize the facts required to work them, and drill the student briefly on the facts prior to having the student work the larger problems.

Written communication criteria, based on a norm process, have been suggested by Tindal and Marston (1990). These standards vary by grade level and include spelling correct letter sequences (from dictation, in writing, and during a 2-minute timing) at a rate of about 45 letter sequences per minute in the fourth grade. The criterion for writing in 3 minutes, from a story starter, is about 16 words per minute at the fourth-grade level.

Written communication fluency can be increased by increasing the student's fluency in handwriting, spelling, and punctuation components. It can also be increased by presenting story starters, or topic sentences, and allowing the student time to plan before writing. Eaton (1984) has suggested having students do 1-minute timings during which they list words related to the topic before timing the story starter. Because transcribing and production are only one aspect of written communication (Bos, 1988) fluency in planning, reviewing, and revising also should be promoted.

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