
CHAPTER 4

Academic Feedback

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A. The Research Literature

The term *academic feedback* refers to those procedures a teacher uses to provide students with information on the accuracy of their oral or written responses to academic questions. Academic feedback is "strongly and consistently related to student achievement" (Filby & Cahen, 1985). The importance of academic feedback has been stressed by researchers studying effective teachers at all grade levels in all basic skills areas. Questions are one of the major vehicles for academic feedback. Brophy and Good (1986) reported that one of the differences between effective and less effective teachers was the frequency of questions. The effective teachers asked approximately three times as many questions as the less effective teachers.

In discussing the findings from a major study, the researchers (Fisher et al., 1980) made the following observation on the nature and importance of academic feedback:

Many different specific behaviors fulfilled this function, including answering questions in class, checking papers, using programmed texts, and listening to oral reading. The percentage of instructional time during which the student received feedback was positively related to student engagement rate and to achievement [p. 20].

In investigating the behavior of effective elementary teachers, Stallings, Cory, Fairweather, and Needels (1977) noted that teachers of classes that made the greatest gains gave more instruction, asked more academic questions, and provided more feedback. In a study of junior high and high school teachers, Stallings, Cory, Fairweather, and Needels (1978) reported that the effective teachers provided more opportunities for academic responses, praised student successes, and provided support and corrective feedback when students did not respond correctly. In contrast, the less successful teachers spent less time interacting with students and more time in organizing rather than instructing.

In summarizing the findings from a series of studies, Brophy and Good (1986) made the following observation, stressing the importance of a strong academic orientation in interactions with students:

... teachers who produced the most achievement were business-like and task oriented. They enjoyed working with students but interacted with them primarily within a teacher-student relationship. They operated their classrooms as learning environments, spending most time on academic activities. Teachers who produced the least achievement usually showed either of two contrasting orientations. One was a heavily affective approach in

which the teachers were more concerned with personal relationships and affective objectives. The other (fortunately, least common) pattern was seen in disillusioned or bitter teachers who disliked their students and concentrated on authority and discipline in their interviews [p. 341].

Academic Feedback Concepts

Much of the research on academic feedback and effective teachers has stressed the importance of (a) feedback opportunities, (b) question types, (c) delivering the questions, and (d) reacting to student responses.

1. Feedback Opportunities. If students are to receive extensive and appropriate academic feedback, a basic prerequisite is a strong emphasis on increasing the amount of academic instruction. It is possible for students to receive a large amount of feedback unrelated to instruction in a specific skill. Feedback on student misbehavior and feedback on nonacademic tasks are not positively correlated with increased achievement. Indeed, extensive feedback related to misconduct is usually correlated negatively with instructional effectiveness. Brophy and Good (1986) reported that a large amount of criticism for misconduct "almost invariably correlates negatively with achievement, and indicates classroom organization and management difficulties" (p. 338).

If the teacher is to create opportunities for academic feedback, consideration must be given to both increasing the amount of instructional time and structuring the academic instruction to facilitate academic feedback opportunities. If the academic instruction is presented in rather large steps and loosely supervised, the opportunity for academic feedback is limited. If the teacher presents information in small steps and intensively supervises the students, the opportunities for academic feedback are increased. Small steps mean that students are generating more academic responses per lesson. Intense supervision is important; teachers cannot provide feedback if they do not know what students are doing or where the students should be going academically.

In analyzing the practices of more effective teachers, Good, Grouws, and Ebmeier (1983) noted that they were far more likely to assign homework and far more likely to provide feedback on the homework. In discussing the attitudinal reactions of students, the researchers reported, "It would seem that the emphasis upon variables, like review and homework (when done in the context of meaningful and successful practice), does not necessarily lower attitudes, as it is sometimes argued" (p. 77).

In summary, because academic feedback is so closely integrated with other time management and instructional presentation skills, a decision to increase the amount of academic feedback could involve a wide range of changes. To increase the quality and quantity of academic feedback, the teacher must first create an environment in which academic feedback is an integral

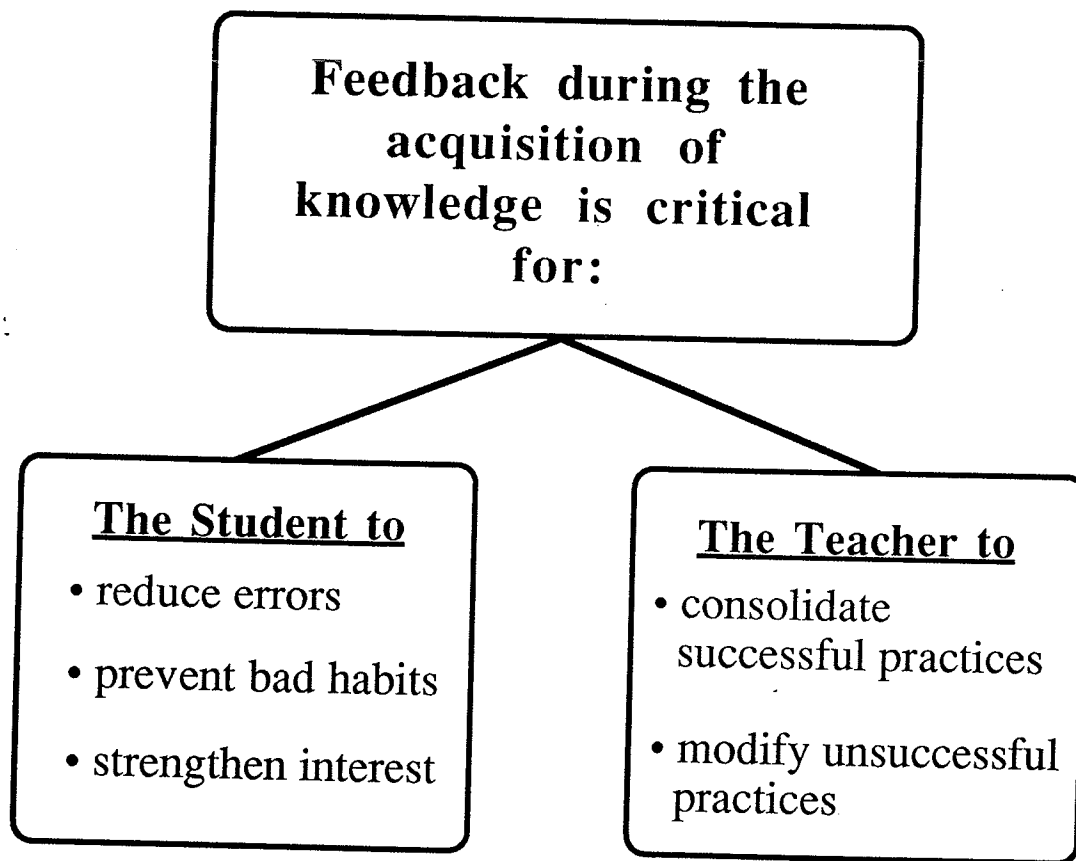
and important part of the teaching process. When academic feedback is associated with such important teaching functions as daily reviewing, guided practice, and reteaching, it is not just feedback to the student, but for the teacher as well. Student performance is a measure of instructional effectiveness, and higher error rates should signal the teacher to modify instructional procedures (see Figure 4.1).

2. Question Types. A teacher's questions can be varied by such practices as changing the difficulty level, changing the cognitive level, and varying the clarity.

Question difficulty. There is a common trend in the level of difficulty of the question asked by effective teachers. Success rates tend to be in the 80 to 90 percent range for the more effective teachers, and in the 60 to 70 percent range for the less successful teachers (Brophy & Good, 1986). Rosenshine and Stevens (1986) summed up the issue of question difficulty with the recommendation quoted on the next page.

FIGURE 4.1

Feedback for Both Student and Teacher



The frequency of teacher questions is not the only important factor, because the percentage of correct student responses also plays a role in successful learning. The importance of a high percentage of rapid ("automatic"), correct responses is a relatively new idea resulting from recent research. Although there are not scientific guidelines as to exactly what the percentage of correct answers should be, a reasonable recommendation at the present time is an 80 percent success rate when practicing new material. When reviewing, the success rate should be very high, perhaps 90 percent, and the student responses should be rapid, smooth, and confident [p. 383].

Cognitive level. The cognitive level of a question is usually treated separately from the difficulty level. It was once assumed that instruction would be more effective if the teacher's questions required the student to use more complex mental processes, such as inductive reasoning.

Low-level questions are typically "What?", "Where?", and "When?" questions. An example of a low-level question would be "What is the first step in adding decimal numbers?" High-level questions are typically "Why?" and "How?" questions. An example of a high-level question would be "How do we find the sale price if we know the discount?"

Although the research on cognitive levels contains inconsistencies, some conclusions can be stated with a reasonable level of confidence. Brophy and Good (1986) have listed the following observations, based on their review of the research:

The data do refute the simplistic (but frequently assumed) notion that higher-level questions are categorically better than lower-level questions. Several studies indicate that lower-level questions facilitate learning, even learning of higher-level objectives. Furthermore, even when the frequency of higher-level questions correlates positively with achievement, the absolute numbers on which these correlations are based typically show that only about 25 percent of the questions asked were classified as higher level. Thus, in general, we should expect teachers to ask more lower-level than higher-level questions, even when dealing with higher-level content and seeking to promote higher-level objectives [p. 363].

Question clarity. Brophy and Good (1986) wrote, "In general, clarity of presentation is one of the more consistent correlates of achievement" (p. 355). Clarity can be reduced if the teacher

- a. Uses vague or ambiguous questions.
- b. Uses disjointed questions, particularly ones that are interrupted by inserting additional background information.
- c. Speaks too quietly or incoherently, or addresses the blackboard rather than the students.
- d. Asks two or more questions without stopping to get an answer to the first one.
- e. Fails to get student attention before posing the question.

3. Delivering the Questions. Questions should facilitate student engagement in academic learning tasks. Questions should also serve to provide feedback to the teacher on the effectiveness of the instruction. A few well-placed questions will tell the teacher if reteaching is necessary. Teacher questions can be directed to groups or individuals.

In their summary of the research on effective questioning, Rosenshine and Stevens (1986) noted, "One technique for obtaining a high frequency of responses in a minimum amount of time is through group choral responses" (p. 384). For choral responding to be effective, the teacher has to use some type of signal to ensure that students respond at the same time. A consistent and briskly paced presentation style is a way of signaling students. Rosenshine and Stevens (1986) further noted, "Choral responses can be an effective way to conduct guided practice" (p. 385).

There appears to be considerable support for a questioning strategy that uses a combination of choral and individual responding. The choral responses are stressed in the earlier stages of guided practice; and individual responses are stressed in the latter stages, when the success rate is higher.

When using individual questions, care must be taken to pose the question before selecting a student. Care should also be taken to ensure that all students are equally involved in the questions. It is very common for a teacher to give the majority of questions to those few students who are eager to respond.

4. Reactions to Student Responses. Rosenshine and Stevens (1986) have noted that most students' responses to questions can be grouped in four categories:

- a. Correct, quick, and firm
- b. Correct, but hesitant
- c. Incorrect, but a careless error
- d. Incorrect, suggesting lack of knowledge of facts or a process

Correct and firm responses. When the student answer is correct and confident, the instructor should not break the momentum with a lengthy statement or extensive praise. A quick "Right" and the presentation of the next question should follow a correct and highly confident student response.

Correct and hesitant responses. If the student is in the initial stages of learning and gives a correct but hesitant response, the teacher should take the time to praise the student for the correct response and review the reasons for the correct answer or the steps associated with finding the correct answer. This quick review will be particularly important if the teacher feels that there are other class members who are also in the initial stages of learning the skill.

Incorrect and careless responses. When the student makes a careless error, the teacher should respond with a quick and

simple correction and allow the student to provide the correct answer. The student should not be berated, but the teacher's feedback should make it clear to the student and the whole class what the correct answer should be. The feedback need not provide the reasons why the answer is correct.

Incorrect due to lack of knowledge. If the student's response indicates that the student lacks knowledge of the facts or procedures necessary to arrive at the correct answer, Rosenshine and Stevens (1986) suggested two options:

1. Provide the students with prompts or hints to lead them to the correct answer.
2. Reteach the material to the students who do not understand [p. 385].

They further noted: "Both of these approaches to error correction—that is, prompting and reteaching—have been used successfully in experimental research and in effective instructional programs" (p. 385).

Reteaching and prompting in response to a student's demonstrated lack of knowledge is sometimes termed a *correction procedure*. The quality of a teacher's correction procedures reflects the quality of all procedures used to present new content. If the teacher is not providing students with elegant rules and practical problem-solving strategies, such rules and strategies will not be available to use in correction procedures for specific errors. Indicators that a teacher may not be providing students with elegant rules and practical problem-solving strategies would include the use of correction procedures characterized by inconsistent responses to different students for the same error, long and convoluted explanations, or explanations that add nothing but tension (e.g., "You wouldn't give a stupid answer if you were thinking").

A correction procedure should, where possible, finish with the student supplying the correct answer. Such a procedure should leave the student with dignity intact.

Questions, dignity, and momentum. As the more effective teachers present new content, they use briskly paced, question-packed, attention-demanding presentations, with a student success rate of 80 percent or better on written problems and oral questions. To ensure continued student involvement, there must be a large number of questions and high rate of success. To preserve both the instructional momentum and individual student dignity, a teacher needs a systematic set of strategies for preventing and dealing with student errors in responding to questions. The previously listed suggestions for responding to different correct and incorrect student responses should be supplemented with a range of strategies to prevent errors, maintain momentum, and protect student dignity.

One of the best error-prevention procedures involves careful rehearsal of questions with choral responses and targeted individual questions. Choral responses are an excellent vehicle for

questions and feedback without threatening individual egos. If the choral responses are followed by individual questions, to higher-performing students first and then to lower-performing students, the probability of success will be higher.

If a student makes an error, quickly rephrase the question with additional prompting and a reduced level of difficulty. Do not prolong this correction process, or you will lose instructional momentum and add to student embarrassment. You should plan to review the question later on in the lesson, also to return to that student with a question that he or she can answer (see Figure 4.2).

Psychological climates for errors. One of the more difficult aspects of giving feedback to students who have made errors relates to the importance of creating a classroom climate where errors are a natural part of the learning process rather than "sins" to be taken personally by teacher or student. Some teachers are reluctant to give feedback on the academic errors for fear of "hurting the student's feelings." Such an approach indicates that the teacher has not created a healthy climate for dealing with errors.

Some teachers will help create a healthy climate by deliberately making errors themselves so that they can model appropriate reactions and demonstrate that there is nothing morally wrong with errors. These deliberate errors are usually made when students have demonstrated high levels of mastery. At such time, the probability of students detecting the error is high, and the risk of student confusion is low. Few things increase student interest more than the possibility of detecting a teacher error.

The teacher who reacts defensively to a student's identification of a teacher error creates a punishing environment for feedback. The teacher who praises a student for detecting a teacher error creates a healthy climate for feedback. Nothing is more destructive to group activities than the presence of individuals who react defensively to feedback. The teacher who models appropriate reactions to feedback from students will be teaching an invaluable social survival skill of lifelong value.

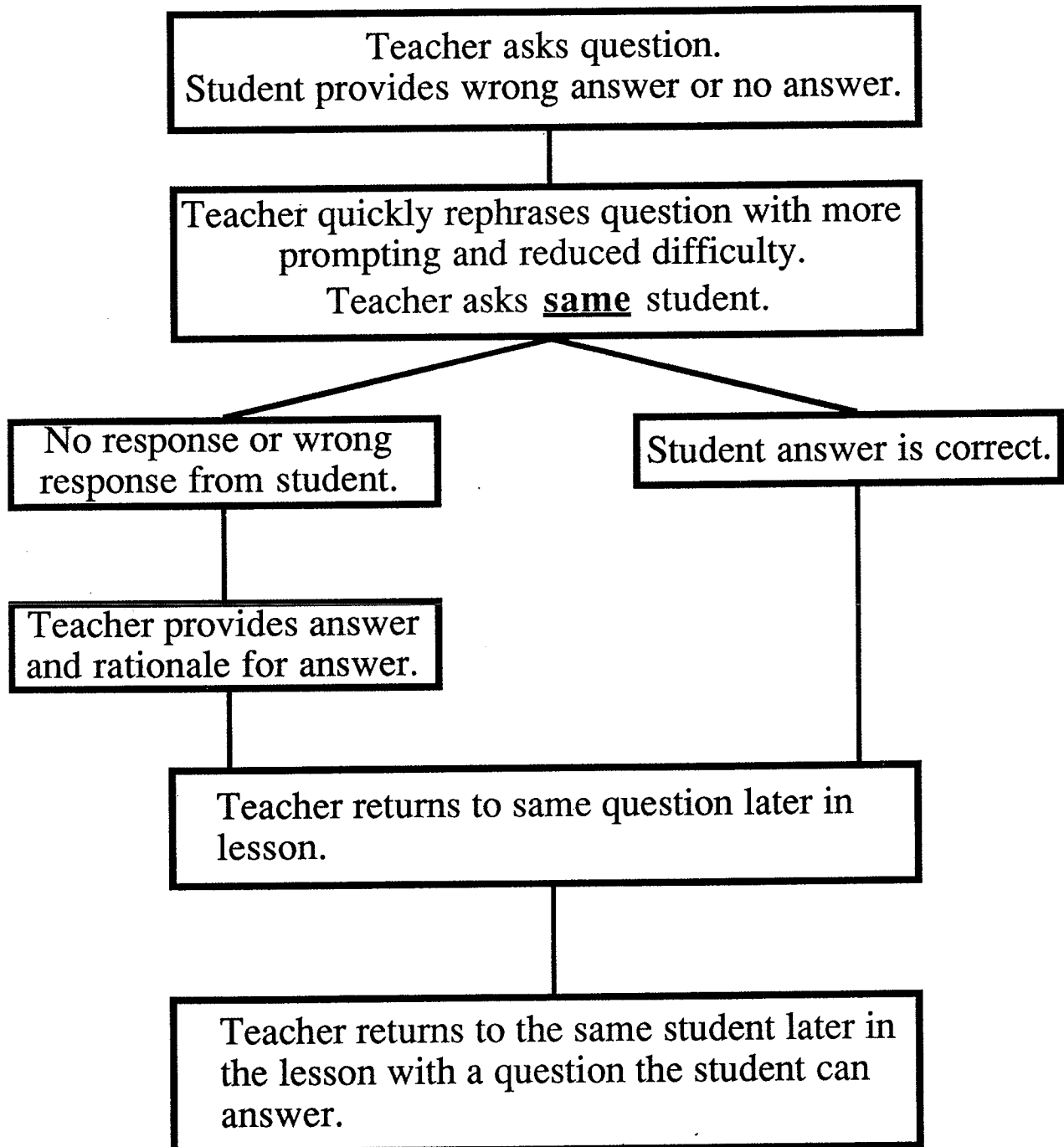
Regardless of what procedures are used, teachers should systematically work for a psychological climate in which feedback to students and from students can be given directly and honestly without the risk of "hurt feelings."

Academic Feedback and Independent Practice

Fisher et al. (1980) noted that a high frequency of "explanation specifically in response to student need" was negatively related to student achievement. They reported that the presence of extensive individual feedback during seatwork may be an indicator that the instruction has structural deficits. This would certainly be the case if students were prematurely placed in independent practice. Fisher et al. (1980) made the following observation with regard to a high frequency of explanation in response to student

FIGURE 4.2

Questions and Errors



need during seatwork: "Frequent need for explanation may be a signal that changes are needed in the student's instructional program, either in the difficulty of the assignments or in preparation for seatwork" (p. 21).

A Dilemma. Filby and Cahen (1985) noted that feedback is "one aspect of a basic teacher's dilemma." They described the dilemma as follows:

A teacher can maximize instructional contact by having whole-class instruction. However, this means that the same content must be taught to all students at the same time. If the class is heterogeneous in terms of skill levels or instructional needs, whole-class instruction may mean inappropriate instructional content for some students. . . . In pursuit of appropriate instruction to meet individual needs, a teacher may establish groups in the classroom. Grouping immediately increases the complexity of the management tasks and is likely to decrease student attention [p. 213].

The fact that whole-class instruction tends to be more highly correlated with student achievement than the more individualized settings is testimony to the importance of the cycle of presentation, monitoring, and feedback—as well as the fact that it is facilitated in group settings.

If a teacher understands that some instructional functions are more easily supported in group and individual settings, serious management errors can be prevented. A serious error occurs when a teacher fails to exploit the strength of a setting or fails to minimize the weakness of a setting. For example, the teacher who talks excessively and fails to question extensively during whole-class instruction does not take advantage of the opportunity for extensive feedback present in the whole-class setting. The teacher that has all students working on exactly the same task during individual seatwork (e.g., independent practice on the same problem) is not using the strength of that setting and adjusting learning tasks to individual needs. In the latter case, the students lose in two ways, because the tasks may be inappropriate and the feedback limited. The teacher, who initiates small-group instruction without the extensive preparation and clear instructions needed to reduce management problems, will negate strengths of the small-group setting (see Figure 4.3).

The whole-class setting is a difficult one if the teacher wishes to vary the task content for different learners. However, it is well suited to providing the needed range of student learning experiences—new content presentation, guided practice, and independent practice. In individual settings, the reverse is true. It is easier to vary the content of learning tasks but very difficult to provide the needed range of learning experiences. Too often the student will not receive the needed guided practice and feedback because of the management problems associated with the individual in-

FIGURE 4.3 Appropriate Tasks and Feedback: A Dilemma

Instructional Setting	Feedback Potential	Management	Appropriateness of Tasks
Whole Class	Extensive opportunities	Easiest	Difficult for content Easy for experience
Small Group	Moderate opportunities	Difficult	Moderate difficulties for content Moderate difficulties for experience
Individual Seatwork	Limited opportunities	Difficult to do right	Easy for content Difficult for experience

structional setting. For a learning task to be appropriate, both the content and the learning experience have to be appropriate. For example, a learning task might consist of guided practice (the learning experience) on multiplication problems with one-place decimals and two-digit numbers (the task content).

One of the advantages of using group instruction first and finishing a class with individual seatwork (as shown in Table 3.1 of Chapter 3) is the teacher's increased capacity to monitor students during the first part of the lesson to determine which ones should be receiving guided practice on problem areas during the individual seatwork. The most effective teachers using whole-class instruction will maximize opportunities for feedback and conduct timely, well-targeted reteaching to reduce student errors and minimize the individual differences in knowledge deficits.

Practice and Feedback. Berliner and Fisher (1985) stated that "Practice, by itself, is not always the best way to learn a complex skill" (p. 336). This will certainly apply if students receive extensive unsuccessful independent practice. If only extensive practice were needed, then college faculty would have more legible handwriting than upper elementary students. Every master teacher of the early elementary grades is aware that a small amount of carefully supervised handwriting practice, with extensive feedback on all the complex processes involved, is far more effective than large amounts of loosely supervised practice. Loosely supervised handwriting practice in the early grades will generate poor habits that will handicap individuals for the rest of their lives.

Some third-grade teachers can teach time telling to one-minute intervals in two weeks; others take all year. One of the key differences lies in the intensity and quality of the practice and associated feedback. The master teacher will select one method

(e.g., the 2:45 method) and teach it to mastery. The teacher may even contact parents to ensure that students receive no conflicting feedback (e.g., by using the 15 till 3:00 method) during the critical skill-acquisition period.

In the early stages of teaching word problems, the student will need feedback on the accuracy of the answer and feedback on the quality of the problem-solving strategies used to arrive at the answer. The more complex the task and the earlier the stage of knowledge acquisition, the more sensitive, targeted, and intensive the feedback must be. Proficiency in this complex aspect of the teaching craft has important implications for increased attitudinal and achievement outcomes in students and reduced remedial workloads for the teacher.

Expectations, Participation, and Feedback

The use of effective academic feedback procedures helps create high expectations for all students. It has been noted that "Teachers who set and communicate high expectations to all their students obtain greater academic performance than teachers who set low expectations" (U.S. Department of Education, 1986, p. 32).

Indicators that low expectations have been established for certain students include:

- a. Students are seated farther away from the teacher.
- b. Students receive less direct instruction.
- c. Students have fewer opportunities to learn new material.
- d. Students are asked to do less work.
- e. Teachers call on these students less often.

The academic feedback procedures are an important component in an integrated set of procedures. The level of implementation of the feedback procedures reflects the degree to which a teacher has mastered the total set of integrated procedures and the degree to which the teacher is committed to meeting the needs of all students.