Blending Precision Teaching into a Model for Effective Instruction

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At no time in the history of education have there been more new ideas and innovations available to educators than there are today (Guskey, 1990). However, despite the claims of their advocates (including the authors of this paper) it is clear that no single instructional strategy or educational innovation will solve all the problems facing teachers (Guskey, 1990). Therefore, educators must direct their efforts toward synthesizing a broad range of effective instructional techniques into a relevant, practical model which can be utilized in classroom practice. Five areas of effective instruction which can be successfully integrated by teachers are described in the following section. After these elements are presented, a discussion of Precision Teaching's congruence with these components is provided.

Research on effective teaching demonstrates that academic learning is influenced by:

1. the degree to which instruction is aligned with student goals.
2. instruction of prerequisite skills and knowledge.
3. the degree to which teachers present new information in the context of what is already known by students.
4. student time-on-task.
5. careful monitoring of student performance, with opportunities for feedback to correct learning errors.

This research can be applied successfully to students of all ability levels and in any instructional setting (Brophy, 1986). In fact, research conducted by Kulik and Kulik (1986), Ward (1987), Walberg (1990), Kulik, Kulik and Bangert-Downs (1990), demonstrates that when these techniques are properly employed, students who qualify for special education services often experience even greater achievement gains than their more able counterparts, thus reducing the differences in performance between the two groups. Furthermore, these effective teaching strategies permit greater inclusion of students with disabilities in mainstream instructional settings (Guskey, Passaro, and Wheeler, in press). The essential characteristics of these components are described below and visually presented in Figure 1.

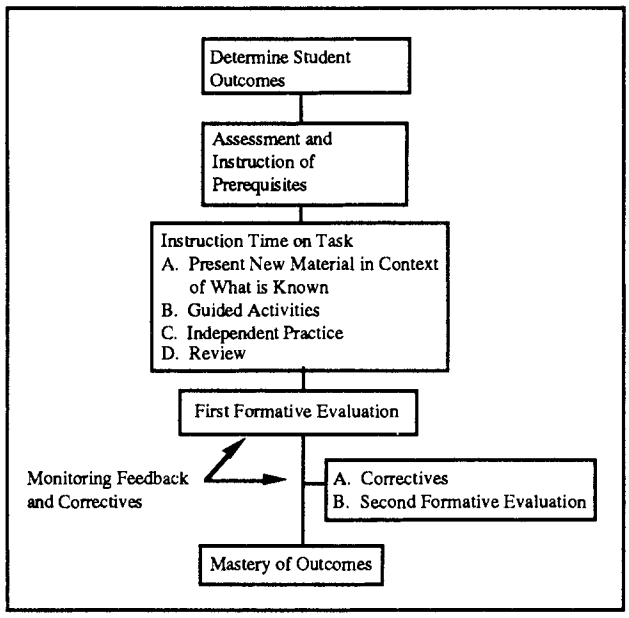

Figure 1

The Degree to which Instruction is Aligned with Student Goals

Defining student goals and outcomes and determining mastery of the criteria are the initial steps in directly teaching to the desired goals and objectives of the student's Individualized Education Program (IEP). Instructional alignment (i.e.,teaching what is tested) explains over 60% of the variance in student achievement (Cohen and Hyman, 1991). Although it may seem strange, the effective teaching, outcome-based education, and the effective schools literatures consistently demonstrate that we rarely align what we teach to what we test (Bloom, 1976; Cohen and Hyman, 1991).

Instruction in Prerequisite Skills and Knowledge

The extent to which a learner enters a lesson with the necessary prerequisite skills and knowledge has been demonstrated to explain 50-60% of the variance in student performance (Bloom, 1976; Leyton, 1983). To implement this component, an assessment is usually developed by the teacher to reflect information s/he deem crucial to successfully begin a new course of study. This assessment can be administered at the start of the school year and the results can provide a specific formula for directing instruction for recoupment. Research conducted by Leyton (1983), demonstrated that 'remedial' instruction of prerequisites can, in most cases, be accomplished within two weeks. The pretest and subsequent instruction can help assure that students will not meet with failure. Furthermore, this prerequisite instruction can help facilitate the introduction of new material into an already established student hierarchy.

The Degree to Which Teachers Present New Information in the Context of What is Already Known

New behaviors or materials to be learned should be divided into instructional units/tasks with components that 'spiral' back to previous learning (Bloom, 1971; Gage & Briggs, 1979). 'Spiraling' refers to including information from previous units to provide for cumulative review while introducing new concepts. These units/tasks are then presented and students are guided through the new material, corrected and reinforced along the way until successful independent performance can be assured. This recently learned content should then be thoroughly reviewed prior to any evaluations. Furthermore, it should serve as the foundation for future units/tasks which will be presented.

Students Time-On-Task

High task engagement rates attained through successful classroom management techniques are the most frequent and powerful correlates of student achievement (Brophy, 1986). However, Latham (1985), and Rich and Ross (1989) have demonstrated that students actually spend less than 50% of any given school hour on-task.

Monitoring of Student Performance, Feedback and Correctives

Following a teacher's initial instruction of the material in a unit, an evaluation or quiz should be administered to students, but not necessarily as part of the grading process. Instead this 'test' should be used first and foremost to provide feedback to both students and teachers regarding what was learned well and what was not. Meta-analysis of the effects of systematic 'formative' evaluation on student achievement with special education students yield .7 standard deviation unit higher than students whose programs are not systematically monitored (Fuchs & Fuchs, 1986). These formative evaluations improve student performance by consistently checking on student understanding, identifying what has been learned well and what has not and then directing additional instruction toward any areas in need of further attention.

If mastery of the task/unit is not accomplished, further instruction should then be offered to students who require additional time and practice to learn the material. Strictly speaking, corrective activities are not reteaching. Instead correctives should focus on specific elements or items in the formative test that were not mastered. In this way each student and educator needs to work only on those concepts or skills that have not yet been mastered. In other words, the correctives are individualized. They are also designed to present the material differently and involve the student in alternative learning activities, identifying for the student another, more appropriate approach to learning that concept. These correctives may be worked on with teacher(s), with peers in cooperative learning teams, or by the student independently (Guskey, 1985).

Precision Teaching: Congruence with Effective Practices

Precision Teaching is a validated educational practice that has two primary applications in classroom settings. First and foremost, Precision Teaching represents a set of continuous and direct rate-based measurement procedures for determining the effectiveness of any instructional program, method, material, or tactic (Algozzine, 1983). Precision Teaching does not dictate what should be taught or how instruction should proceed (White, 1986). Rather, this measurement system will provide ongoing feedback to the teacher and the learner as to whether the progress toward end-of-unit objectives or curriculum that represents at least six to eight weeks worth of instruction is improving, maintaining or worsening. This information, which is then charted on a Standard Celeration (learning) Chart, allows for precise decision-making to occur. Teaching becomes more effective and efficient; instructional changes can be made immediately in

order to adapt to the unique needs of each student.

A second application of Precision Teaching involves the use of timed practice exercises (Lovitt et. al., 1990). In this situation, approximately five to eight different instructional items or tasks related to the end-of-unit objectives are presented to the learner. Each item is repeated at least two to three times on a formatted practice sheet, or in a deck of cards, with corresponding answers written on the reverse side of the sheet or card. Other input and output chanels can be used such as hear and mark, see and do, etc. Individually, or with a partner, who is checking and providing feedback, the learner says or writes responses to as many tasks as is possible for the student during the timed period. The timed period usually lasts anywhere from 15 seconds to 2 minutes. These practices are provided daily and should directly align with the small slices of information contained on the measurement sheet. Counting and charting of performance is not required for these short, timed practice exercises.

The following discussion will identify the ways in which Precision Teaching is aligned with the five areas of effective instruction identified in this paper:

The Degree to which Instruction is Aligned with Student Goals

The process of defining student goals and objectives, stated in Precision Teaching terminology, is called pinpointing. Pinpointing involves specifying the precise behavior (or movement) in terms of behavior pairs. Selection of behavior pairs involve the identification of the behavior(s) to be increased and the behavior(s) to be decreased often corrects and errors for academic objectives. The behaviors (objectives) which are identified are then represented as test items on an end-of-unit type test. Daily instructional procedures would then be closely aligned with the goals and objectives and the end-of-unit measurement. Additionally, the process of pinpointing includes establishing and articulating rate-based standards of performance which are specified as aims. These aims represent mastery or proficiency levels necessary for skill maintenance and/or progression to subsequent pinpoints. Pinpointing increases the alignment between instruction and student goals.

Instruction of Prerequisite Skills and Knowledge

Precision Teaching procedures include components devoted to the identification and instruction of tool skills. Tool skills are skills that are prerequisite to the performance of other basic skills. Precision Teaching provides for tool skill and basic skill screening procedures, including procedures for identification, placement, and/or grouping of students. Teachers can easily develop their own assessments or probes that are aligned with their instructional units or programs. These probes can be used as the basis for identifying the appropriate starting points for instruction. Assessments representing end of year goals and objectives may also be developed and used for monthly or weekly administration in order to assess student progress toward these larger chunks of curriculum.

The Degree to Which Teachers Present New Information in the Context of What is Already Known by Students

Precision Teaching measurement procedures can provide for the construction of rate-based unit tests that include a percentage of review items (pinpoints). For example, unit tests may be developed in the following proportions: approximately 70% of the items to represent minimal competencies, approximately 15% of the items to represent advanced competencies, and approximately 15% of the items to represent review competencies. The review items would be drawn from the minimal competency items which appeared on all previous unit tests. In this way, the teacher can easily provide for maintenance checks on already mastered information.

Precision Teaching practice procedures also provide for cumulative review. Daily timed practices on new items can be accompanied by shorter, timed practice sessions on items from previous daily lessons.

Student Time on Task

Precision Teaching is not a method for presenting or delivering instruction on new information. However, as a technique which involves students in rate-based measurement and/or practice exercises, these procedures substantially increase the number of opportunities for students to respond. The number of response opportunities is correlated with higher student achievement. Consequently, Precision Teaching procedures can greatly enhance task engagement rates by several minutes a day

Monitoring Student Performance, Feedback and Correctives

The effects of formative evaluation procedures on

student achievement have been clearly documented (Fuchs & Fuchs, 1986). Precision Teaching is clearly a validated example of one such monitoring procedure which can be effectively integrated into a model for effective instruction. Continuous and direct measurement are underlying premises of Precision Teaching. In fact, Precision Teaching procedures would suggest more frequent (i.e., daily) measurement of student performance than most other mastery learning models. Precision Teaching measurement procedures require ongoing charting of performances which have also been shown to be an important factor in improving student performance (Fuchs, 1986).

Finally, ongoing data-based decision making is an integral component underlying the process of Precision Teaching. Inspecting charted data pictures and asking pertinent questions regarding performance leads the learner and the teacher into the identification and selection of the most effective and appropriate interventions/correctives. This allows for more precise teaching and learning to occur.

Summary

Validated educational technology is available to educators. It is also evident that this technology can be successfully translated, blended, and integrated into classroom practice. By effectively combining these proven practices, teachers can ensure skill mastery.

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