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ABSTRACT

A model of student learning processes is presented, based on the theory originally set forth by Benjamin Bloom that as much as three quarters of the differences in achievement among students is dependent on the attitudes, knowledge, and skills which students bring to a learning task. The model focuses on a specific learner approaching a specific task. Discrepancies between the learning potential of the student, as assessed by the teacher, and the actual performance of the student are explored from the viewpoint of various learning theories and situations. The paper concludes that the present crisis of public confidence (or lack thereof) in education will continue, unless reactive blame-laying is replaced by positive action: Teachers must come to be regarded as professionals in public service rather than as public servants. (Authors/LH)

PREPARING TEACHERS TO IMPLEMENT DIAGNOSTIC/PRESCRIPTIVE INSTRUCTION

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Introduction

In his book Human Characteristics and School Learning, Benjamin Bloom posits a causal theory to explain the variances in achievement among learners in school settings. From his studies he suggests that:

1. Up to fifty percent of the variance is due to possession by the learner of cognitive entry behaviors necessary for a unit of instruction. If, for example, a unit is designed to help students learn to multiply two digits by one digit, can the individual multiply one digit by one digit?

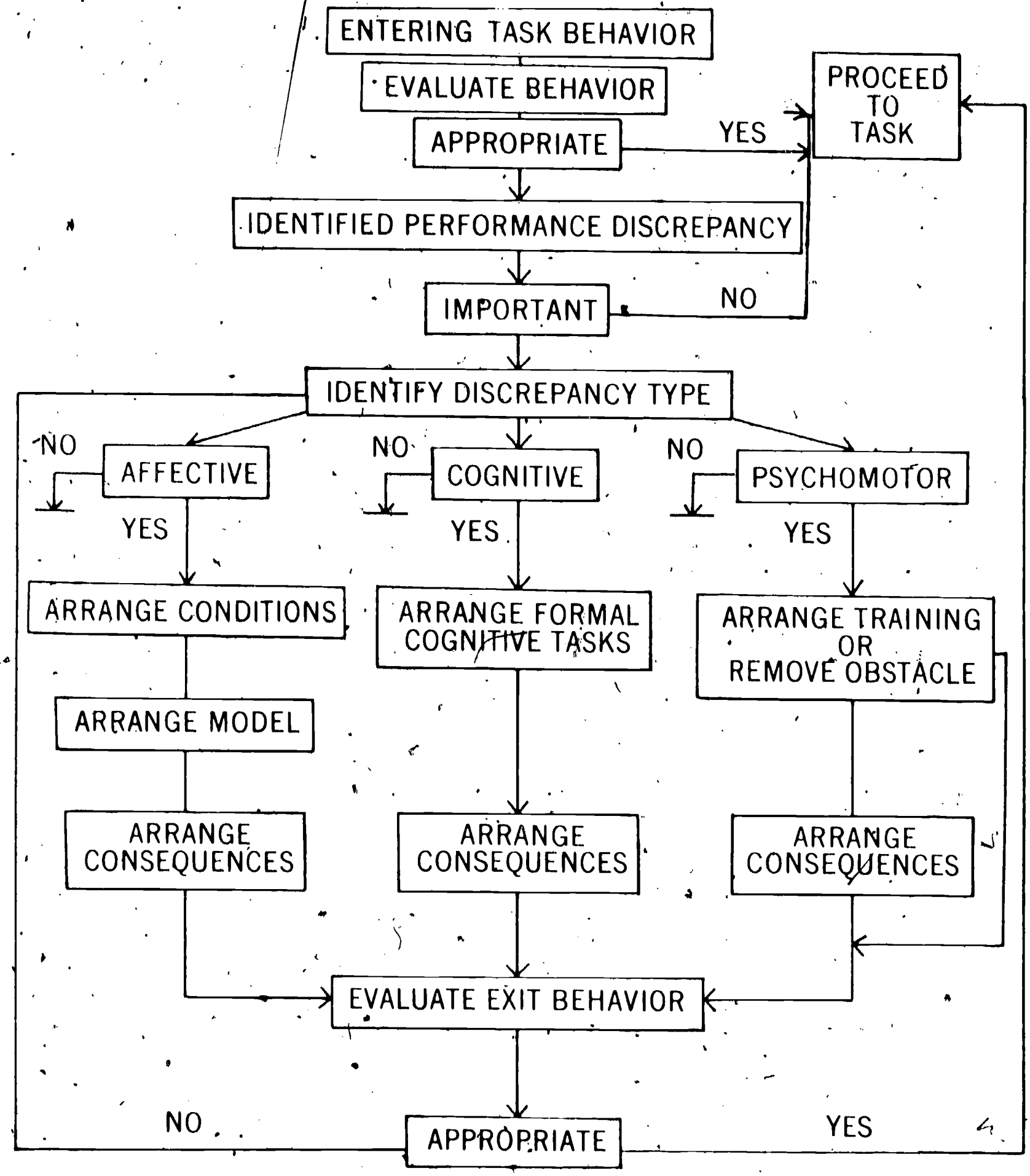
2. Up to twenty-five percent of the variance is due to affective entry characteristics of the learner. Does the learner have sufficiently positive perceptions about his/her potential for success in the learning environment that he/she will put forth the amount of effort needed to complete, and gain from, a learning task?

3. Up to twenty-five percent of the variance is due to the quality of instruction. How appropriate and timely are cues, participation and reinforcement (especially feedback and corrective procedures) provided by the teacher and materials in the learning task?

While Bloom's theory remains to be fully verified, its implications for the initial preparation and continuing education of teachers are obvious. If as much as three quarters of the differences in achievement among students is dependent on knowledges, skills and attitudes students bring to a learning task, then teachers must become much more skilled in assessing and diagnosing those

factors for instructional practice to improve the quality of services provided to learners.

Formal diagnostic procedures and instruments, however, tend to be so complex and time-consuming, and their results so often subject to misinterpretation, that we recommend a less formal process--but a process that is nonetheless based on data. The focus of this model, following the lead of Bloom, is a specific learner approaching a specific learning task. The model, visually represented in the following figure, is adapted from Robert Mager's Analyzing Performance Problems.



AN INTERVENTION MODEL
BASED ON STUDENT BEHAVIOR
IN LEARNING TASKS

Stage 1: Does a Discrepancy Exist?

The first stage in our model concentrates on the teacher's focusing on the individual student about to enter a learning task, and asking the following question:

Given what I know about this student's past behavior, what is the likelihood he/she will successfully complete this task?

If the response is that the student likely will complete the learning task successfully and gain from that experience, the student is directed to proceed. If the answer is "likely not," the next question is,

Stage 2: What Sort of Discrepancy Exists?

If he/she is likely to encounter major difficulties in completing the task, are those difficulties because the student can't do the work, or because he/she won't do the work?

The teacher's answer to this question must almost always be tentative, simply because what may seem to be a poor attitude on the part of a student may be the result of a history of being faced with tasks for which the individual has had neither the knowledge or skill necessary for success. The net result is a pattern of avoidance behavior toward school tasks, a pattern which may be interpreted incorrectly as an issue that is totally one of attitude: "He/she just won't try/work/concentrate/stop bothering others."

We suggest, however, that the teacher seek as much data as possible before formulating any hypothesis as to the likely cause of a performance problem or even tentative specification of the type of problem.

Many data sources are commonly available. These include, but are not limited to, teacher observations of the student's past performance, standardized test scores usually available in the cumulative records maintained in the school, teacher-made test scores, and information gained from conferences with the student or the student's parents.

Cognition and skill data are usually readily available and comparatively easy to interpret, provided the teacher is willing to put forth the necessary effort. It is the affective domain--attitudes, feelings, values--that most teachers are unprepared to address with any coherent direction. We have found Mager's Developing Attitude Toward Learning to be extremely helpful in assisting teachers to focus on specific behaviors as reflections of underlying attitudes. Mager suggests viewing student behavior in terms of approach and avoidance. Does the student tend to begin work on specific tasks when directed to do so, volunteer constructive comments, bring in pertinent ideas and experiences from outside the school setting (all of which tend to be approach behaviors), or does the student tend to avoid certain tasks and/or subjects (i.e:, mathematics)?

Stage 3: How Should This Discrepancy be Addressed?

Once the type of discrepancy has been specified, strategies for ameliorating the problem must be developed. In our model we suggest different routes for strategy development and implementation depending on whether the initial specification of the discrepancy is affective, cognitive or psychomotor. Basically the process can be addressed again as a testing of hypotheses.

Hypothesis 1: The student will have problems in this learning task because he/she lacks the knowledge and/or skill to begin working on the task. The strategy here is evident: appropriate information and practice needs to be provided for the student to acquire the requisite knowledge and/or skills. Depending on the nature of the problem, that practice may more appropriately be provided by a support specialist than by the classroom teacher. Normally, however, the classroom teacher is required to develop data on the specific nature of the learner's difficulties in order to tap that outside assistance.

Hypothesis 2: The problem seems to be psychomotor in nature. The psychomotor realm covers a broad variety of areas, from a physically handicapped

student who has difficulty in moving about the regular classroom, to students experiencing problems in reading and writing--both of which are highly psychomotor in nature. Reading involves a high degree of coordinated eye movement, and writing a high level of hand-eye coordination. Problems of physical movement by the student can often be accommodated by the classroom teacher by some rearrangement of the physical space in the classroom. Unless the teacher is well trained in the analysis and remediation of psychomotor deficiencies, and can devote the amount of time necessary to assist a student experiencing such difficulties, we recommend the use of a support specialist.

Hypothesis 3: The data indicate that the student has the knowledge and skill to do the work, but the student avoids it. Perhaps the major issue in these cases is, what are the consequences--immediate consequences--to the student for completing, or not completing, an assigned learning task? Does it really make any difference? If not, then perhaps conditions and consequences need to be arranged, the student should be fully informed of what they are, and they should be enforced. Does task completion bring about any sort of positive consequences? Does failure to complete a task result in any negative consequences? Are those consequences reinforcing from the student's frame of reference?

Hypothesis 4: The student can't do the work and doesn't want to try. Unfortunately this sort of case occurs all too often, especially in the upper grades, when students have fallen behind in acquiring the additional knowledge and skills required for each successively difficult level. We recommend that the initial efforts in such cases be directed toward student attitudes. Unless the student begins to feel some sort of success in school tasks, avoidance behavior will dominate and will rule out virtually any attempt to upgrade knowledge and skill development.

Conclusion

Unless teachers at all levels are assisted in developing the skills that students bring to a learning task, the crisis of public confidence presently existing will continue. Reactive blame-laying (to parents, earlier teachers, or anyone else) must be replaced by positive action if teachers in the future are to be regarded as professionals in public service, rather than public servants. The time to begin is now.

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