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ABSTRACT

Measuring the exchange process between teacher and child, a neglected but necessary pursuit, is dependent upon the identification of the behavior system through which information is exchanged and upon the instrumentation used for measuring that exchange. This paper describes an instructional strategy, intended for use with disabled readers, in which process variables may be distinguished. Instruction involves the identification of the child's learning strengths and weaknesses, the use of success-oriented diagnostic procedures, the selection of curriculum task objectives and attendant criteria for success, the review of appropriate teaching techniques, the development of a cueing system in which the teacher can signal feedback, and the institution of appropriate reinforcement and feedback schedules. The present concern of this strategy is to recast educational procedures and processes so that data about the educational exchange process can be used both in measures of student progress and in curriculum design. (KS)

# EXPLORING CHILDREN'S STRENGTHS: A PLANNING STRATEGY FOR DISABLED READERS

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# EXPLORING CHILDREN'S STRENGTHS: A PLANNING STRATEGY FOR DISABLED READERS

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The classic measurement dilemma confronting educational testors has been the dichotomy between the thrust for individualization, on the one hand, and the use of normative, outcome based instrumentation for testing, on the other. Although recognizing the relevance of differential pace and style vis-a-vis the child's progress through the school system, we have still continued to evaluate that progress on the basis of specific output objectives related to pre-identified time frames.

Even if educators were ready to utilize process measures as part of their test batteries, it is questionable whether the current state of the [educational] art would allow for such instrumentation. J.W. Buckley[1] has argued that all human systems require both product and process data and that while we have developed a complex technology for the former, we are only at the threshold of the latter. Even in the works of Cole[2], Banathy[3], Meager and Pipe[4], and Davis, Alexander and Yelon[5] the response to process has been in the areas of decision-making and planning, rather than evaluation. They have utilized standard test devices in examining the information passing through the system, even where such instrumentation is unrelated to the processes involved.

In order to examine the process exchange between teacher and child and use it for planning, two major factors are necessary:

1) Identification of the behavior system through which information is exchanged

2) Instrumentation for measuring that exchange

Identification of a Behavior System through which Information is Exchanged

The thrust of this paper is to relate teacher observations of task performance on the part of reading and learning disabled children to the issue of classroom planning. Central to this approach is the adoption of a series of logic rules used in the Demonstration/Planning System, co-developed by Yehoash Dworkin and this author. The logic rules help the teacher identify the task objectives and success criteria which can be subsumed into the standard curriculum with which he/she has to work. In essence, the planning cycle involves: a) identification of areas of satisfaction and concern; b) identification of maximum strategies through observation of a success-oriented demonstration with the child or children in question; c) selection of curriculum task objectives and attendant success criteria; d) review of appropriate techniques available by task area, grade, materials, etc.; e) development of seried cueing frameworks; and f) development of appropriate reinforcement and feedback schedules. The system, used in both Washington, D.C. inner-city schools[6] and in suburban Maryland, is committed to "errorless learning" as the optimal channel through which information should flow between teacher and child at risk.

I. Diagnosis

A. Identification

The first commitment is to an identification of the child in terms of strengths rather than through a clinical examination of weakness. The vehicle for such identification must take into account specific academic and behavior items which are of concern to the classroom teacher. In effect, those items by which the teacher ultimately judges her own effectiveness as a transmitter of information should be

used in identifying areas of satisfaction vis-a-vis the child in question. The information in no way labels the child. Rather, it helps the teacher review her current feelings about the child's ability to succeed as projected against unique curricular and classroom conditions which are critical in her management of the whole class. The information will be used both during the ensuing demonstration and in the planning that follows. The identification of strengths are of great help in determining the selection of tasks during the demonstration. The areas of teacher concern serve as feeder channels during selection of task objectives for the planning segment. Ultimately, the preparation of an identification form should be based on cooperative planning between the teachers in a system and those who will demonstrate strategies with the child, although it is information supplied by the teacher which triggers the entire system.

B. The Demonstration (Diagnostic Component)

The commitment in the Demonstration itself is that the child be helped to achieve success on every task attempted. The work is organized around three classroom strategies, generally familiar to classroom teachers, and each illustrates a separate element of problem-solving. The first strategy, Binary Logic (or Programming) takes the child from a body of known information to the unknown. The necessary ingredient for each task is that the child need only solve a binary problem, with one of the two elements already identified. The strength

of the approach is that in each category of information (i.e., mathematical symbols, linguistic symbols, colors, shapes, etc.) the child need know only the element in order to accumulate vast bodies of information. The exit point in this strategy depends on the patience of the child and the inventiveness of the demonstrator in adding new items.

The second strategy is that of patterning, in which the child moves towards concepts through mathematical or aesthetic patterns. The primary materials are numbers, letters, words, and sentences. This strategy series is most closely related to the basic curriculum concerns of the elementary grades, revolving around mathematical and language arts problems. The demonstrator's task is to help the child identify unique patterns in any given problem. These may be the use of color, position, numerical increment, directionality, and the like. The ultimate is to have the child solve standard classroom problems and to help the teachers develop approaches in which they can consciously utilize pattern as a strategy for helping children arrive at correct responses. The pattern strategy possesses the additional virtue of allowing full modality exploration since the patterns may be established visually, auditorially, or kinesthetically.

The third strategy is that of Focusing. The major intent is to help the child identify material which may otherwise be "hidden" from him because of figure-ground confusion, general reading deficits, specific auditory or visual deficits, or the like. In general, it is all too easy to tell the teacher that deletion of distractions would

help children concentrate on their work. Under most standard classroom conditions, there is very little control over the environment. Further, isolation of a child may also imply short and long-range penalities and stigmas which far outweighs the advantages. What is quite feasible, however, is a reordering of materials in order to help the child structure his search for appropriate solution.

Parallel with the strategies is a three stage cueing system through which the teacher can make use of feedback to the child in an organized signal system. The first cueing level leads to a re-identification of the initial instruction. Although the demonstrator may change empahsis, all of the elements of the initial problem and its solution are held stable. The second cueing level leads to an isolation of parts of the problem, growing out of the child's original performacne. Ultimately, the parts of the problem which have been isolated are returned to the rest of the problem, so that the solution remains stable despite a change in the problem's initial elements. The third, and final cueing level, leads to a manipulation of all of the elements in the problem, and, if necessary, the solution itself. In essence, all of the parts of the problem may be changed, solution may be arrived at a piece at a time, and the child may be physically guided through the problem. The point of the final cue is to guarantee that the child will succeed regardless of the effort necessary on the part of the demonstrator. It is a cue sparingly used only after the first two levels have been exercised.

The final element of the Demonstration is the reinforcement system worked out between demonstrator and child. Prior to the first task,

the child is given the option of selecting reinforcement with which he feels most comfortable. Where children are hesitant to suggest, the demonstrator may offer a few reinforcing expressions or gestures, but the choice is always left to the pupil. The child is then informed that the selected reinforcer will be used at each point of task completion and success. In all cases, the demonstrator utilizes a neutral term to indicate a willingness to continue working with the child until completion and success. Basically, the system recognizes three broad areas of reinforcement. The first is utilized upon achievement of the task; the second with partial success, and demands that the demonstrator identify which part of the answer the child has gotten right so that he may use it as a model in completing the rest; the third is utilized when the child is having difficulty with the entire problem, and the neutral reinforcer indicates the willingness of the demonstrator to continue working with the child until completion and success, increasing thereby the probability of risk-taking on the part of the child.

II. Planning (Strategy Selection)

Following the demonstration, the teacher is asked to select which strategy and cue she felt were most effective in helping the child achieve completion and success.[7] The demonstrator and teacher review the various tasks within the strategy framework, and cooperatively identify the mechanisms which seemed to help the child. This strategy

selection will serve as a basis for the planning phase.

Following the identification of preferred strategies, the teacher is asked to select specific classroom tasks, within the current curriculum, that can be accomplished over a period of two to four weeks. Task selection leads to the establishment of task objectives related to specific success criteria which can be made known to the child, and are easily measurable by the teacher. Techniques are then developed which utilize the strategy initially selected by the teacher. Following this step, the teacher and demonstrator work out at least one cue for each level, for each task. It is helpful if the teacher has an automatic path from Identification, through Isolation, to Redefinition (or manipulation) in order to clarify a task when the student has difficulty.

Perhaps the most individualistic aspect of planning lies in the development of a reinforcement schedule. The style of both the teacher and child are critical in finalizing a methodology by which the child is apprised of his own success. Although most classroom situations impose structural difficulties when it comes to individualizing reinforcement, it's approrpriate to introduce uniqueness when planning for single children. It is often remarkable how varied are the children's reinforcement preferences!

In the final analysis, the system functions out of a series of logical steps rather than preplanned assessment-remediation combinations. Throughout, stress is laid on the identification and use of the child's strengths both for diagnostic and planning purposes. There is also

concern for overloading the classroom system. The issue is not to demand massive retraining and long range assessment programs. Rather, it is to work alongside the teacher in recognizing inherent abilities to expand the child's horizons.

Instrumentation for Measuring Exchange

The instrumentation is developed in the form of a demonstration protocol with a specific algorithm identifying the problem-solving process between teaching and learning organisms.[8] Contemporary educational theory recognizes the interaction between teacher and child as being as much (or more) a critical factor in the learning framework as the mere accumulation of information bits.[9] Further, process as a condition, has no inherent valence and is universal to learning. While particular process characteristics may grow out of prior experience, cultural identification and the like, there is no step in the education of the child which functions outside the realm of interactive process. Thus, in this author's view, the process between teacher and child represents a stable condition in all learning exchanges and thus, lends itself to evaluative measurement regardless of the nature of the school population.

The measures deal with the behaviors demonstrated as teacher and child work out solutions to a series of problems. Each of the logic paths followed by the teacher and child is measurable in terms of three distinct scores. There is an effort score measuring the effort invested by teacher and child in arriving at solution; a task score involving differential weighting based on accumulated solutions; and, a task/effort ratio involving the relationship between process effort and accumulated tasks. The tracing of logic paths growing out of the weightings, constitute the information derived from the

system which can be used for academic planning.

The major challenge in applying process measures is to identify the "behavior system" in which teacher and child operate. This is a substantively different problem from that of observing and reporting on particular characteristics of teacher and pupil style, heuristic functioning, and the like. In essence, it is necessary to develop a problem-solving grammar which is seen as general to the process regardless of the specific objective. The syntax of this grammar must be so clear that it is easily identifiable within the most complex task parameters. The algorithm, described in detail in "The Cybernetic Environment of Teacher and Child," ASC Cybernetics Forum, Volume VII, Number 4, Winter 1975, 10-16, deals with such a grammar in an educational setting.

In summary, theorists such as Davis, Alexander and Yelon maintain that all learning, ultimately, is problem-solving, even including simple acts which should be almost au matic. Simon[10] and Ashby[11] refine the notion of problem-solving by adding a condition of selectivity which depends on feed ack of information from the environment. Eastman[12] and Cole insist that problem-solving is a creative action which fits in with W. Buckley's notion that the response of open systems to problems (i.e., "environmental intrusions") is elaboration or change. Common to all of these interpretations is a sense of both change and response to information. In effect, the production demands made upon teaching and learning organisms in educational structures require transformation and elaboration of information in conformity to preset standards of appropriateness. Thus, our present concern with problem-solving is to attempt to recast educational procedures and processes so

that process data can be generated for use in both progress measures and curriculum design.

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