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DISSEMINATING AN EFFECTIVE EDUCATIONAL TECHNOLOGY

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Tsitser is a Yiddish noun for a person who goes "Tsk! Tsk!" while someone else's house is burning down. A *tsitser* does not call the fire department or pour buckets of water over the fire. A *tsitser* simply goes, "Tsk! Tsk!" The field of education has plenty of *tsitsers*. Engelmann (1991) points out that mainstream educators use the language of moral indignation and single-minded commitment when it comes to educating today's youth. Yet, the reality is that these educators are not promoting the teaching techniques that would produce desired goals.

Binder (1991) states that educators often blame their failures on poverty and other events beyond their control. He points out, however, that many educators fail to recognize that a factor within their control—effective instruction—can overcome detrimental sociological factors. In fact, these findings raise the question of whether poverty causes poor educational achievement or whether poor educational practices can lead to poverty.

B. F. Skinner frequently claimed the solution to our educational problems lay with effective teaching practices and that the findings from behavioral science could produce such technology (Skinner, 1984). Happily, the technology presently exists in the systems of classwide peer tutoring (Greenwood, Carta, Kamps, & Hall, 1988), comprehensive application of behavior analysis to schooling (Selinske, Greer, & Lodhi, 1991), direct instruction (DI) (Becker, 1988), and the personalized system of instruction (PSI) (Keller, 1968), among others. Unhappily, effective technology is seldom used in our schools and colleges. This situation is even more lamentable, given Sulzer-Azaroff's (1986) assessment that even a small number of benign behavioral procedures for controlling classroom deportment and promoting academic gains could revolutionize education.

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REASONS FOR THE FAILURE TO ADOPT BEHAVIOR-ANALYTIC TEACHING STRATEGIES

Given that schools frequently fail to meet their educational mission and that techniques already exist to educate children effectively, one may wonder why so few youngsters ever receive the benefits of behavioral technology. It is likely that a number of factors, other than effectiveness, determine which procedure and curricular materials will be adopted by a school system. Several behavior analysts have dealt with this question and have speculated on the factors that have resulted in the underuse of behavioral procedures. These factors are discussed in the sections below.

Language and Tradition

The language and practices of applied behavior analysis run counter to the language and perceived practices of American culture. The language of our culture is one of freedom, independence, and psychoanalysis. It matters little that this perception may be illusory and that freedom and psychoanalysis are incompatible. What does seem to matter are people's perceptions. Thus, when we use terms like consequences, control, reinforcement, and punishment, we are seen as coercive and controlling. This image is further strengthened when behavior analysts use procedures termed time-out, overcorrection, and contingent shock. Also, the fact that behaviorists alone have been successful in working with the most disabled populations has been a two-edged sword. On the one hand, we are given some credit for our successes with difficult clients; on the other hand, we are often seen as promoting a psychology that does not pertain to the mainstream.

This perception is not attenuated by the fact that behavior-analytic principles were initially discovered in laboratories, using pigeons and rats as subjects.

The enticing language and concepts of psychoanalysis are pervasive. They can be found in soap operas, novels, and advertisements (Pumroy & McIntire, 1991). Thus, Bailey (1991) states, "Teachers . . . won't buy into a seemingly mechanistic and deterministic technology of behavior change. This is foreign to them and inconsistent with the rest of their training . . . (children) having problems means they (teachers) are not meeting some intrinsic need; therefore, they must work harder and dig a little deeper" (p. 446).

Implementation Issues

Many of the original behavioral procedures were devised in special education classrooms where there were few students and ample resources (Hall, 1991). The conditions are different in regular classrooms, making some of the procedures unrealistic. Also, many of the procedures are difficult to carry out under any conditions. For example, it is not easy for teachers to give the frequent and enduring attention required to administer some consequences; nor is it easy for teachers to be consistent on a daily basis, to ignore student provocations, to withhold reinforcers from students who missed the criterion for privileges by a small margin, or to shape a new behavior from its rudimentary stages to a level of proficiency. Also, much of what teachers must do takes place in the absence of reinforcers (e.g., merit pay) for their extra efforts.

University Factors

The traditions, politics, and tenure systems of universities have all been factors in the failure to disseminate behavior-analytic procedures. First, most colleges of education are staffed by faculty trained in, and committed to, nonbehavioral approaches to teaching. This is particularly true of faculty in regular education, as opposed to special education. Thus, there are few courses in behavior analysis for prospective regular education teachers (Pumroy, 1984). To teach such a course would require time-consuming skill development in an area with which most regular education faculty are unfamiliar and often oppositional.

A second problem, described by Greer (personal communication, October 3, 1991), is that behavior analysis has been associated with psychology. He claims that psychologists tended to concentrate on reducing disruptive classroom behavior while leaving pedagogy to teachers, assuming that the teachers are experts in this area. When the teachers successfully reduced disruptive behavior, they saw no further use for behavior analysis technology. Thus, the relationship between behavior analysis and the teaching of academics was not established.

A third difficulty at the university level is described by Buskist, Cush, and De Grandpre (1991). They point out that PSI-based instruction has not had a significant impact on college or primary school teaching, despite impressive research in its favor. They attribute this to the "inertia of the lecture" (p. 215). It is easier and less time consuming for professors to lecture than it is to organize teaching according to a more effective PSI format. The lecture also casts the professor in the position of an authority figure and minimizes the need to deal interpersonally with students.

Finally, the promotion and tenure system at universities encourages certain types of research while discouraging other research. At most universities, personnel matters are decided according to numbers. The more publications a candidate has, the more likely the candidate is to be promoted. Universities might see this as equitable, because it is difficult for people outside a candidate's area of interest to judge the quality of his or her scholarship. The problem is that such a standard encourages faculty to conduct clean-cut, short studies. Thus, there is no incentive to conduct the time-consuming, lengthy studies that are required to address dissemination issues.

Marketing Problems

The two major means by which behavior analysts disseminate their findings among themselves are through articles in professional journals and through presentations at meetings. Neither of these mech-

anisms is of any use to teachers or school administrators. What is needed is a functional means of marketing our achievements. Yet, Bailey (1991) points out that, unlike other professionals, behavior analysts have failed to engage in product development or marketability. Successful marketing is a science of its own. Learning this science means learning the language of marketing, packaging the product, training teachers how to use it, responding to problems and complaints, and monitoring the use and effectiveness of the product.

Disseminating a Technology That Works

Sulzer-Azaroff (1986) recalls an early behavioral maxim when she states that behavioral educators need to remind themselves that the student is always right. If the educational community does not embrace behavioral strategies, the appropriate antecedent and consequence conditions are not in place. The task then is to break the barriers of change through an appropriate analysis of the problem. This charge, of course, is easier to meet with pigeons in a Skinner box, in which conditions of control are present than it is with educational administrators and school boards, for whom conditions of control are more difficult to achieve. Also, it should be understood that educators *do* adopt new procedures (e.g., the whole language method for reading). The problem is that they seldom adopt *our* approach and rarely demand evidence of the effectiveness of *any* approach. Meanwhile, the task for behavioral educators has at least two parts. The first is to devise effective pedagogical strategies. This has largely been achieved. The second is to find the means to disseminate them. This has yet to be done (Axelrod, 1991). Our research efforts should, therefore, be more directed toward the latter rather than the former. To achieve the goals of dissemination, I recommend special efforts in the areas of creating motivational conditions and devising marketing systems.

Creating Motivational Conditions

To reorient the efforts of behavioral researchers toward conducting dissemination studies, existing reinforcers can be used, but first response requirements should change. Axelrod, Moyer, and Berry (1990) made several recommendations in this direction. Special issues of journals could be devoted to research and discussion of the dissemination process. Granting agencies could fund research that examined the means to achieve widespread and long-term dissemination of effective technology. Behavioral organizations such as the Association for Behavior Analysis (ABA) and the Association for the Advancement of Behavior Therapy (AABT) could give periodic awards to researchers for achievements in dissemination.

In the public sector, ABA and AABT could give awards to school administrators and school board members for adopting effective educational strategies. In addition, more effective use of parental efforts could be made. In special education, parents have been responsible for much of the litigation and legislation granting all children the right to a free, appropriate education. Conceivably, the efforts of parents could be roused to pressure school systems to use the best available educational technology. This process could be enhanced further through local and national media coverage. If such efforts fail, lawsuits such as the one filed by Engelmann (1991) against the State of California's reading curriculum seem appropriate.

Marketing Behavioral Products

An increasing number of behavior analysts are pointing out that we have been more successful in devising effective technology than we have been at disseminating it (e.g., Geller, 1989; Schwartz & Baer, 1991). But the problem of dissemination can be approached in the same manner as other problems. It can be defined, measured, and analyzed for salient antecedents and consequences. When dissemination behaviors occur, they can be reinforced.

Binder (1991) sees marketing as relevant to achieving dissemination and suggests that behavioral educators use procedures comparable to those employed by successful business people. This includes assessing the needs of educators, developing tangible products, packaging the product in an appealing manner, and using language understand-

able to the public. Binder's marketing recommendations also include means for increasing public exposure by conducting regular education seminars, selling behaviorally based educational materials in supermarkets, and meeting with administrators, parent groups, and corporate leaders. Binder's points are supported by Hall (1991), who recommends selling field-tested, reasonably priced products that are based on behavioral science principles. Hall further suggests publishing articles in regular education journals and newsletters and becoming involved in undergraduate teacher training. Finally, behavior analysts, with appealing presentation styles, could further dissemination through participation in popular talk shows and news magazines, such as *20/20*.

There are three major points relevant to packaging behavioral products. First, if the packaging includes evidence of the overall effectiveness of the materials, it may be possible to create a healthy competition among curriculum manufacturers concerning the efficacy of their products. Second, the best products are likely to have behavioral principles embedded within them (Binder, 1991). This reduces the teacher's burden of having to implement abstract or misunderstood behavioral principles. Third, if we are to use language that appeals more to the public, we will have to be careful not to obscure our technology so that it becomes indistinguishable from less effective approaches.

Entering new areas of application will not compromise the research emphasis of behavior analysts. Instead, it will raise different kinds of questions. Thus, there may be research on the best means of encouraging educators to adopt behavioral products, the best techniques for getting teachers to carry out behavior-change procedures properly, and the measurement of lifelong effects of teaching children from preschool through college according to behavior-analytic principles. Also, if marketing research indicates that the simplest teaching procedures are the ones most likely to be adopted by teachers, such procedures can become goals for further studies. An example of such a study was provided by Albers and Greer (1991), who found that simply increasing the number of three-term contingencies (e.g., the teacher asks a question, the student responds, the teacher gives feedback) a teacher uses resulted in major improvements in student learning.

Concluding Comments

The Philadelphia public schools have problems common to most urban school systems. At this writing, I am attempting to get them to use effective behavioral technology for teaching academics. I had to choose one of the effective approaches listed earlier in the paper. My choice was the DI approach. This was done in spite of the fact I have some concerns about DI. It bothers me that continuous measurement is not used, that some components of the procedures have not been researched, and that the procedures sometimes seem unaesthetic. But, in addition to its impressive record of effectiveness, DI has something else going for it. It has been packaged, it has salespeople, it has an association people can join, it has a newsletter, it has a phone number to call for users who are having problems, and it can be used with only 1 or 2 days of training (Paul McKinney, personal communication, October 1, 1991). There are major components to making a technology disseminable.

Finally, the tasks that face behavioral educators are probably less appealing than the ones they engaged in in the past. It is more reinforcing for most behavior analysts to research new procedures than it is to sit at meetings with marketing people and school administrators. Nevertheless, this is a necessary direction for applied behavior analysis.

Macher is another Yiddish noun. A *macher* is a doer. A *macher* gets things done even if there are obstacles and even if the work is not fun. If behavioral educators are to revolutionize education, they must become *machers* and not *tsitsers*.

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