

Applied Behavior Analysis and the Movement to Restructure Schools: Compatibilities and Opportunities for Collaboration

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The field of applied behavior analysis has devoted considerable effort to the problem of educating America's youth. In addition to developing a wide range of procedures to improve children's academic and classroom survival skills, behavioral researchers have discussed a wide range of technological characteristics that are likely to facilitate the adoption of their procedures by educational decision-makers and practitioners. A movement to restructure American schools has become highly popularized within educational, political, and public media forums over the past several years. One general characteristic of this movement is its failure to recommend the more frequent implementation of applied behavior analysis techniques to educate America's youth. A close inspection of three global models for school reform, however, reveals notable compatibilities with the focus and goals of applied behavior analysis. Applied behavior analysts can collaborate with and contribute to the school restructuring movement by pursuing the more formal and systematic analyses of characteristics essential to the adoption process.

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American public schools have received consistently low evaluations over the last decade. Eight years ago the National Commission on Excellence in Education conducted a comprehensive evaluation of public schools.

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Their findings indicated that educational practices were mediocre and even inadequate for a large number of students (National Commission on Education, 1983). Other similar critiques are unanimous in their conclusions that American schools provide an inadequate education for the vast majority of students (Goodlad, 1984; Howe, 1986; Powell, Farrar, & Cohen, 1985; Sizer, 1984). Moreover, the President's recent proposal for educational reform indicates that our educational system has made little improvement over the past five years (America 2000).

These dismal evaluations have led many educational reformers to believe that public schools, as they are presently organized, are not capable of educating America's children. Subsequently, a movement to "Restructure American Schools" has become very popular within political and public media forums, and was recently regarded as the most promising direction for educational reform (*Business Week*, 1988). This new movement proposes *drastic and fundamental* changes in our *entire educational system*, ranging from individual classrooms and buildings to entire school districts and community neighborhoods (David, 1991; Wissler & Ortiz, 1986). In fact, specific restructuring proposals range from endowing teachers with greater autonomy to select instructional objectives and techniques (Rowan, 1991), to enlisting teachers as monitors and evaluators of their peers (Shulman, 1987), and to permitting parents to select schools of their choice (Raywid, 1991). Indeed, the President's proposed educational reform strategy, "America 2000," calls for similar structural changes, including the development of world class standards for core academic subjects, more frequent assessment of children's academic achievement, differential pay and merit to outstanding teachers, and alternative certification programs for teachers and principals.

One common dimension of these and many other school restructuring proposals is that they have ignored the prior efforts of applied behavior analysis, which have focused on the very outcomes that school reform hopes to achieve. More specifically, the wealth of effective practices that have resulted from behavior analysis research have not been adopted or recommended for large scale implementation by advocates of the school restructuring movement (Axelrod, 1991; Binder, 1991). This apparent "slight" is addressed by six prominent behavioral researchers in a recent issue of the *Journal of Behavioral Education* (1991). While all six individuals agree that behavior analysis products have been ignored by educational decision makers, they offer an interesting diversity of perspectives and solutions to the apparent dissemination problem.

The primary purpose of this article is to carefully examine the continuity between the field of applied behavior analysis and the current movement to restructure American schools. A first section will briefly

review the nature of behavior analysis efforts within public schools and discuss 13 technological characteristics that have been posited as necessary for the adoption of behavioral procedures within educational settings. A second section will describe the current school restructuring movement, including a wide range of specific proposals that fall into three general models of reform. The continuity between each school restructuring model and the focus and objectives of applied behavior analysis will be examined. Finally, we will discuss areas where applied behavior analysis is compatible with and might contribute to the movement to restructure American schools.

CHARACTERISTICS OF AN "ADOPTABLE BEHAVIORAL TECHNOLOGY"

The field of applied behavior analysis has focused on the application of experimentally derived principles to solve pressing societal problems (Baer, Wolf, & Risley, 1968). The education of America's youth has always represented a significant societal problem, and has thus attracted considerable attention from behavioral researchers. In an early article, Bijou (1970) recognized the benefits that applied behavior analysis offered to the field of education. Teachers would be equipped with a set of sound techniques for meeting the diverse needs of their students. Principals, psychologists, counselors, social workers, and even parents could work together with teachers to more effectively educate youth. In essence, the entire field of teaching would advance as a profession by adopting the technology of applied behavior analysis.

Since that time, applied behavior analysis has been committed to developing and applying an effective technology for educating America's youth. Indeed, behavioral procedures have been developed to teach children a host of primary academic skills (Axelrod & Paluska, 1975; Delquadri, Greenwood, Stretton, & Hall, 1983; McKenzie & Budd, 1981; Van Houten & Van Houten, 1977) as well as to modify their independent study skills (Kohler, Schwartz, Cross, & Fowler, 1989), completion of homework assignments (Harris & Sherman, 1974), school attendance (Brown, Copeland, & Hall, 1972), social interactions with peers (Paine, Hops, Walker, Greenwood, Fleischman, & Guild, 1982), and disruptive behavior in the classroom (Drabman, Spitalnik, & Spitalnik, 1974). Textbooks have been developed to familiarize teachers with applied behavior analysis procedures (Jenson, Sloane, & Young, 1988; Sulzer-Azaroff & Mayer, 1986; Wolery, Bailey, & Sugai, 1988). Finally, several researchers have focused on the large scale dissemination of behavior analysis within public schools

(Becker, 1978; Bushell & Ramp, 1974; Greenwood, Dinwiddie, Bailey, Carta, Dorsey, Kohler, Nelson, Rotholz, & Schulte, 1987; Hops, Walker, Fleischman, Nagoshi, Omura, Skindrud, & Taylor, 1978).

Behavior analysts have also expressed interest in facilitating educators' *adoption* and *long-term utilization* of their technology. In this regard, Baer, Wolf, and Risley (1968) argued that behavior analysis techniques should be *applied, behavioral, technological, effective*, and produce *generalizable* effects in order to win adoption. Later, Wolf (1978) noted that the *social validity* of goals, procedures, and effects are important to consumers' acceptance of applied behavior analysis techniques. Hall, Delquadri, Greenwood, and Thurston (1982) and Gerber and Kauffman (1981) suggested that educational interventions should be *practical* for teachers to implement. Finally, Fawcett, Mathews, and Fletcher (1980) added that to be adopted, behavioral technologies should be *inexpensive, decentralized, flexible, sustainable, simple*, and *compatible* with teachers' current experiences and values. These 13 characteristics of "optimally adoptable interventions" and their definitions are provided in Table I.

Two significant points can be made about the characteristics in Table I. First, these 13 qualities have only been *posited* to relate to the adoption of behavioral techniques. Unfortunately, very little research has actually examined the functional impact of these variables on teachers' acceptance and long-term use of classroom innovations. Second, the characteristics in Table I all pertain to aspects of a specific instructional intervention or technique. None of the qualities pertain to non-procedural variables that might affect the adoption process, such as the quality of administrative support and supervision, the frequency and type of staff development activities, and existing standards and incentives for teacher effectiveness. Both of these points will be addressed later in this paper.

THE MOVEMENT TO RESTRUCTURE SCHOOLS

As noted earlier, the school restructuring movement recommends vast and fundamental changes in our *entire* educational system. In the most comprehensive and up-to-date discussion available, Elmore (1991) characterizes all school reform proposals as following one of three general themes for change: (a) proposals to reform schools' academic content; (b) proposals to reform the occupational conditions of teaching; and (c) proposals to reform schools' relationships with their consumers. While proposals from all three models are concerned with improving schools' ability to teach children, each holds a different position on *what types of changes* will best

Table I. Thirteen Likely Characteristics for the Dissemination of Applied Behavior Analysis Procedures

Characteristic	Definition
Applied:	Focus on objectives that are of interest to society.
Behavioral:	Improve individual's ability to <i>do</i> something effectively.
Compatible:	Consistent with the values, past experiences, and current needs of its consumers.
Decentralized:	Suitable for small-scale application. Appropriate for implementation at levels suitable for the scale of the problem.
Effective:	Produce improvements that are immediately apparent to consumers and large enough for practice value.
Flexible:	Invites consumers to create their own procedures based on original exemplars.
Generalizable:	Produces outcomes that endure across diverse settings, responses, and over time.
Inexpensive:	Cheap enough to be accessible to the typical consumer. Economic profitability and low perceived costs.
Practical:	A real savings in time and effort.
Simple:	Tailored to fit the skills and capabilities of potential users.
Socially Acceptable:	Addresses objectives that society values, uses procedures that are acceptable to consumers, and produces outcomes that are satisfying.
Sustainable:	Capable of being maintained by indigenous personnel rather than being dependent on program developers or outside resources.
Technological:	The techniques are sufficiently identified and described to enable effective replication from a typically trained consumer.

accomplish this objective. Each model and its specific characteristics are described next.

Technical Model to Reform Schools' Academic Content

This model is designed to improve schools by directly altering the curriculum and instructional procedures associated with students' academic experience. For the classroom teacher, technical restructuring requires applying the most effective instructional methods to accommodate a host of diverse conditions (i.e., activities, students, etc.). At the school building, district, and community levels, technical restructuring entails the management of resources and organizational factors to promote teachers' effective delivery of instructional content.

At the center of the technical reform model is the assumption that technologies of teaching and learning are derived from formal methods of scientific inquiry (Elmore, 1991). Thus, school restructuring is accomplished through a formal process of "research and development" (R & D), where educational problems and needs direct research activities. In turn, research activities yield products that are disseminated for classroom application (e.g., academic curricula, teaching methods, etc.). Expertise in teaching requires knowledge of educational theory and methods as well as the ability to incorporate research products into routine instructional practices.

Technical restructuring efforts utilize a host of classroom level variables to improve students' achievement. Among the more prominent reform models, Berliner (1984) notes the importance of instructional time, and distinguishes between allocated time, engaged time, and student academic learning time. Allocated time pertains to the amount of time allotted to a particular subject area. Engaged time relates to students' proportion of "on task" behavior. Finally, academic learning time (ALT) refers to a high rate of student *active* responding on a task that is directly related to the outcome of primary interest (e.g., reading comprehension).

Student tasks and grouping arrangements also impact their academic engagement and achievement (Bickel & Bickel, 1986; Greenwood, Delquadri, Stanley, Terry, & Hall, 1986). Teachers' pacing of instruction should be brisk, yet ensure that students have the opportunity to absorb and master the material (Berliner, 1984). Cooperative learning is a highly popularized technique that has been extensively field-tested and adopted by many school districts over the past five years. Finally, a wide range of behavior analysis procedures has been developed for teaching academic skills, including direct instruction (Gersten, Carnine, & White, 1984),

precision teaching (Lindsley, 1990), the exemplary center for reading instruction (Reid, 1986), public posting (Van Houten & Van Houten, 1977), classwide peer tutoring (Greenwood, Delquadri, & Hall, 1989), and most recently, the use of a three-term contingency trial (Albers & Greer, 1991).

Some behavior analytic technical reform efforts have addressed school-level organizational variables to influence teachers' use of effective instructional techniques. For example, Greer (in press) describes a model entitled CABAS (Comprehensive Application of Behavior Analysis to Schooling). The model focuses on the application of behavior analysis to students, teachers, and supervisors within an *entire* school building. Students learn to assess their own academic performance by coding teachers' antecedent instructions, the quality of child academic behaviors, and teachers' subsequent consequences. Teachers are taught to use behavior analysis tools to assess and teach students' individual education plan goals. Finally, supervisors learn organizational behavior management procedures to monitor and facilitate teachers' effectiveness. This model has been tested in a school of 38 students with multiple handicaps, eight certified teachers, and three building supervisors with overall results being very impressive (Selinske, Greer, & Lodhi, 1991).

In summary, technical reform proposals view the *modification of schools' academic content and instructional practices* as the primary means for improving students' achievement. In many respects, this model is highly compatible with applied behavior analysis, in that both focus *directly* on instructional methods and variables to improve American schools. In fact, technical reform proposals may well recommend the more frequent implementation of behavior analysis products, including direct instruction and classwide peer tutoring.

Despite their similar orientation, some technical reform efforts differ from applied behavior analysis in notable and significant ways. For one, some proposals to modify schools' academic content are based primarily upon descriptive or correlational, rather than experimental studies (Bickel & Bickel, 1986). Although educators have criticized these studies for not providing evidence of cause and effect relationships (Purkey & Smith, 1983; Rowan, 1991), the *experimental* methodology of applied behavior analysis is not widely acknowledged as a more effective strategy for developing instructional techniques. Subsequently, many technical reform proposals continue to be based upon the results of descriptive and correlational studies.

Relatedly, schools' typical instructional content has recently been characterized as teaching is telling, knowledge is facts, and learning is recall (Cohen, 1988). Critics have argued that this model is obsolete and should

be replaced by a "teaching for understanding model" that deploys *both* facts and learning strategies to engage students in *active* problem solving (Elmore, 1991; Brophy, 1992). Applied behavior analysis has sometimes been equated with this now passe "knowledge as facts" approach. For example, in a recent discussion of effective teaching, Rowan (1991) characterized the direct instruction model as a routine and mechanistic strategy that is not appropriate for addressing the wide diversity of American students and educational goals. In any case, children's higher order thinking skills have received only minimal attention from applied behavior analysts and other educational researchers (Bickel & Bickel, 1986). Of late, however, several researchers have discussed the challenge of studying children's critical thinking skills within the behavior analysis methodology (Kinder & Carnine, 1991). Further research in this area provides behavior analysts with a challenging opportunity for collaboration and contribution to the school restructuring movement.

As noted earlier, applied behavior analysts have posited that numerous technological characteristics might hasten educators' adoption and long-term implementation of their procedures. Some qualities such as *effective* and *generalizable* have received a great deal of systematic examination (Greenwood, Carta, & Kamps, 1990; Stokes & Osnes, 1986). Conversely, other characteristics such as *practical* and *simple* have been discussed, but received little formal attention. In this regard, Hall (1991) recently blamed "faulty procedures" for teachers' failure to incorporate behavior analysis techniques into their daily routines. He noted that many procedures are incompatible with the structure of regular classrooms, require excessive efforts from teachers, and have produced minimal impact on students' academic performance. A behavioral technology of peer-mediated interventions, including group-oriented contingencies, peer tutoring, and peer management, has aspired to be more practical and simple than many alternative instructional methods (i.e., Alexander, Corbitt, & Smigel, 1976; Greenwood, Sloane, & Baskin, 1974; Young, 1981). In a summary of the peer-mediated literature, however, Kohler and Strain (1990) reported that very few studies have formally examined and/or reported important dimensions of practicality, such as the amount of adult time and effort needed to teach children their intervention roles, the time and effort spent conducting and monitoring daily intervention sessions, and children's ability to complete intervention tasks independent of adult supervision and assistance. Regrettably, these very characteristics of practicality may influence a teacher's decision to use one particular technical reform technique over another (Gerber & Kauffman, 1981; Hall et al., 1982).

In essence, it appears that applied behavior analysis has not formally examined all of the characteristics that are posited to enhance its adoption. Research that experimentally examines these technological qualities might provide two important benefits. First, analyses of the 13 qualities in Table I will begin to clarify their functional relationships, if any, to procedural adoption. The list of “optimally adoptable qualities” could be modified to include only those characteristics that have a direct causal relationship with teachers’ adoption and long term utilization of instructional innovations. New qualities could be added to the list as they are established. Second, such efforts should hasten the development of an educational technology that is even more practical, simple, flexible, etc. than the present one (Kohler & Strain, 1990). *Only* by isolating and manipulating the dimensions of each technological quality, and then examining the direct effects of these manipulations, will researchers improve the “adoptability” of their procedures.

Researchers have also suggested that better dissemination methods might enhance teachers’ acceptance and long term use of applied behavior analysis techniques. For example, Hall (1991) notes that behavior analysts have often published their research in journals that are not widely read by educational practitioners. Furthermore, some behavioral teaching procedures require special materials or curricula that are not readily available or affordable to many school districts. Similarly, Binder (1991) recommends a range of specific marketing procedures, including segmenting the marketplace to identify opportunities for greatest impact and seeking alternative educational markets for behavioral products.

Finally, the vast majority of behavior technical reform efforts have focused on classroom-level variables to improve students’ academic performance (i.e., development of effective instructional procedures). In contrast, the CAPAS model developed by Greer (in press) applies behavior analysis principles to an entire school. An implicit assumption of this model is that dissemination of effective practices at the classroom level requires incorporating behavior analysis principles to an entire educational structure, involving students, teachers, and supervisors. Comprehensive efforts of this nature may well lead to the long-term dissemination of behavioral products.

Professional Model to Reform the Occupational Conditions of Teaching

This model improves schools by directly altering the occupational conditions of teachers’ work. For the classroom teacher, school restructuring

requires continual access to new skills and knowledge as well as greater control over instructional variables (e.g., educational goals, use of time, etc.). At the school building, district, and community levels, the appropriate structure is one that provides the above conditions to produce a highly proficient and expert teacher (Rowan, 1991).

A primary assumption of the professional model is that schools' failure to educate students is attributable, in large part, to the poor conditions of teachers' work. Two frequently cited conditions are a lack of professional collaboration and limited access to knowledge and skills, which are illustrated in the following scenario by Sykes (1991):

Teachers work alone and receive little feedback. Many teachers neither observe teaching nor have their teaching observed by colleagues. Schedules preclude much collaborative planning. Funds are unavailable for work in the summers. Teachers have little access to sabbaticals, to conferences and workshops, to good university courses. Districts vary in their resource commitments to staff development, but most offer two to three days of teacher training per year and tie up most of the teacher development budget in salary increases for desultory course taking and empty credentialism at local universities (p. 75).

Included within the professional reform model, then, are proposals to provide teachers with more time to plan, design, and evaluate instructional activities (Gideonse, 1991); more opportunities to collaborate with their colleagues (Duckworth, 1986; Showers, 1985); and greater access to new knowledge and skills (Sykes, 1991). Teachers' acquisition of new knowledge should be rewarded with higher status, higher material rewards, and greater autonomy in practice.

The issues of teacher professionalism and autonomy are of primary importance in this model of educational reform (Elmore, 1991). A dominant theme is that schools should be organized to more closely approximate the conditions of other professions. State and local regulations should be minimized to provide teachers with more freedom to select their own instructional objectives, materials, and techniques. Teacher salaries should be commensurate with other professions to attract and maintain higher quality, more committed individuals. A general *assumption* is that these types of changes will improve teachers' ability to effectively deploy academic content and teaching technologies with their students.

Like the technical model of reform, the systematic knowledge derived from scientific inquiry plays an important role in professional proposals for school restructuring. As noted by Elmore (1991), however, the two models differ in subtle, but important ways. In the technical model, the discovery of systematic knowledge leads *directly* to modifications in schools' academic content. In essence, scientific inquiry drives educational practice. The professional model, however, places *equal* importance on the judgmental knowledge that teachers acquire from their day-to-day experience. In fact,

the systematic knowledge derived from scientific research has little meaning until it is applied in the highly discretionary nature of teacher practice. Since the teacher makes decisions about the nature and deployment of academic content, it is this individual who is the central figure in the application of knowledge, and an important figure in its creation as well (Gideonse, 1991).

Teachers must receive constant exposure to both systematic and judgmental knowledge in order to develop and refine their instructional skills. Systematic knowledge is best acquired through frequent inservice and university courses as well as interaction with educational researchers or technical experts. Judgmental skills, on the other hand, can only be acquired through direct teaching experience or from collaborating with professional colleagues who have extensive classroom experience. Recommended teacher collaboration activities include designing instructional curricula, planning academic materials and activities, and observing and contributing to one another's instructional methods.

In many respects, this model of school restructuring bears little continuity with applied behavior analysis. Although both fields share a common interest in students' academic achievement, applied behavior analysis has not yet examined the occupational conditions of teaching that have generated interest from professional reform advocates.

Another disparate area concerns the value of judgmental versus systematic forms of knowledge. For example, researchers have been criticized for not incorporating teachers' knowledge into their educational technologies (Eisner, 1978; Tinkunoff & Ward, 1983; Weick, 1976). This conflict reflects incompatible assumptions about the nature of teaching that may never be fully resolved. Of late, however, several researchers have noted the shortcomings of an "expert" model of behavioral consultation. Rosenfield (1991) recently proposed a "collaborative" consultation model where applied behavior analysts and teachers work together to *contribute* their unique and mutual knowledge and expertise to the development, evaluation, and refinement of educational innovations. Potential benefits of this process include teachers' greater adherence to prescribed goals and procedures (Rosenfield, 1991).

Applied behavior analysis might enhance its contribution to the professional reform model by pursuing several other areas. First, the field should re-examine and expand the methodology used to assess the *social validity or acceptability* of its goals, procedures, and outcomes (Schwartz & Baer, 1991; Winett, Moore, & Anderson, 1991). The recent applied behavior analysis literature contains numerous cases where teachers and other consumers are asked to indicate their satisfaction with intervention goals, procedures, and outcomes *at the completion* of experimental studies

(Kohler, 1986; Schwartz, 1991). In order to truly understand social validity, behavior analysts should conduct satisfaction assessments *throughout* as well as at the termination of a research effort (Schwartz & Baer, 1991). Second, teachers might be provided with a *choice* of two or more effective techniques to solve a problem. A teacher's choice to implement one procedure over several alternatives is the ultimate test of social validity and has been utilized to identify the procedural preferences of both college and elementary-aged students (Harris, 1986; Kohler & Greenwood, 1990; Lockhart, 1979).

A greater focus on teachers' adoption and long-term use of behavioral procedures may lead to the more formal examination of the other qualities in Table I. During the 1970s, RAND researchers examined variables that were associated with educators' implementation and adoption of federally funded innovations (Berman & McLaughlin, 1978). Several findings were especially notable. First, *every* innovation underwent some degree of modification or adaptation during its initial implementation stages. The most effective efforts were characterized by a process of mutual adaptation, where both the innovation and setting were modified to accommodate one another. Second, every classroom, school, and district implemented the same innovations in different ways. Innovations that were applied uniformly or rigidly were least likely to be effective in the short run and seldom continued over time.

According to the RAND reports, then, a high degree of procedural *flexibility* is necessary for teachers' effective implementation and long term adoption of educational innovations (see Table I). This finding is highly congruent with the judgmental knowledge principle that is so central to professional reform proposals. Although applied behavior analysts have identified *flexibility* as an "optimally adoptable quality," very little research has examined this characteristic. These systematic and experimental analyses might take several forms. First, researchers might examine the relationship between various levels of implementation accuracy/flexibility and the effectiveness of behavioral procedures (LeLaurin & Wolery, in press). Such efforts could specify the degree to which teachers can modify a specific intervention and still produce good outcomes. Second, future studies might experimentally examine the relationship between teachers' modifications of and long-term use of educational innovations. Studies of this nature will begin to illustrate the extent and conditions under which flexibility is important for procedural adoption *and good outcomes*.

The professional model of school reform also highlights the importance of the *decentralization* and *sustainability* of educational technology. McLaughlin (1990) has recently recommended that change efforts should engage the support of teacher network groups in order to be sustained

over time. Teacher collaboration is one promising mechanism for creating and utilizing natural networks of teacher support. In fact, teachers have collaborated in a wide variety of ways of late, including providing training to their novice colleagues, observing, facilitating, and supporting one another's use of instructional innovations, and even evaluating one another's performance (Joyce & Showers, 1982; Ludlow, Faieta, & Wienke, 1989; Munro & Elliot, 1987; Rach & Hoyle, 1990). Behavior analysts might utilize teacher collaboration teams to ensure that their instructional strategies are *decentralized*, or applied at the levels most suitable for their effective and long-term implementation. Traditionally, many intervention development and evaluation activities have been conducted with *individual* teachers, who learn to incorporate specific techniques into their instructional routines. Although this level of application is likely to improve students' academic achievement, it does not solve teachers' need or desire for ongoing assistance and support from a colleague. Therefore, *school-based* teacher collaboration teams might promote both the *decentralization* and the *sustainability* of behavior analysis techniques within public school classrooms and buildings.

In summary, a focus on teacher *adoption* and *long term utilization* of effective instructional strategies represents the most viable area for collaboration between applied behavior analysis and the professional model of school restructuring. Despite intensive efforts by technical experts and school administrators, many instructional innovations never find their way into teachers' routine practice (Cuban, 1988; Welch, 1979). The challenge of accomplishing change within public schools has been a topic of considerable discourse by school reformers over the past 15 years. A few variables posited to ensure effective reform efforts include strong building leadership and teachers' active participation in decisions about the change process (Corbett, Firestone, & Rossman, 1987; Crandall, Eisman, & Louis, 1986; Fullan, 1982). Despite their interest in dissemination, applied behavior analysts have rarely examined these types of variables. Efforts of this nature may enhance our collaboration and subsequent contribution to the professional model of school restructuring.

Model to Reform the Relationship Between Schools and Their Consumers

This model judges the success of public schools on how well they meet the goals and outcomes preferred by students, parents, and the community at large. At the classroom level, effective teaching requires responsiveness to the needs of individual students and to parents' preferences for

what students should learn and how they should be taught. At the school building and district levels, educators are rewarded for making decisions consistent with the preferences of their clients.

Several reforms of the client type have become popular during the past decade. One, called the "schools of choice arrangement" requires the intentional diversification of schools, so that each develops its own diverse or unique program. Families are permitted to select from schools that vary on any number of variables, including orientation to discipline, class size, academic content or curriculum, instructional approach, etc. This arrangement is an integral part of the President's educational reform strategy that will be implemented over the next several years (America 2000).

The topic of parental involvement in public education has generated considerable interest during the past several decades. For example, Coleman (1977) recommends that public policy provide families and their children with educational *entitlements* rather than mere services. In this regard, the Association for Behavior Analysis recently established a task force on Students Right to Effective Education. The group outlined a wide range of entitlements for students, including those pertaining to educational objectives, assessment and placement procedures, and instructional techniques (Barrett et al., 1991). Finally, Greer (1991) has proposed specific standards for pedagogy and schooling from the viewpoints of students, parents, teachers, and supervisors.

Parents frequently express a desire to contribute to their child's education. In fact, Lombana (1984) cites a survey to indicate that 82% of parents wish to be more involved in their children's school. Numerous strategies for parents' involvement have been proposed, ranging from serving on school advisory boards, to evaluating the effectiveness of teachers and principals, to participating in union negotiations, to lobbying school boards for alternative policies, to setting up alternative schools (Englemann, 1991; Jones & Jones, 1976; McAllister-Swap, 1987; Sowers, 1980).

Client reform proposals also call for empowering students with more input into decisions traditionally reserved for teachers, administrators, and school board members. In this regard, Villa and Thousand (1990) propose two types of student empowerment activities. In teacher-student team teaching arrangements, a selected student observes a classroom teacher delivering math or reading instruction to an entire class. Following several observations, the student gradually assumes responsibility for teaching a greater portion of the lesson, ultimately teaching the entire period under the direct supervision of a teacher. In a second arrangement, students serve along with teachers on transition planning teams, IEP teams, and support networks to operate as advocates for their peers with disabilities (Villa &

Thousand, 1990). Federal law also mandates that students with IEP's have the right to participate in all IEP meetings and decisions. Finally, other proposals have called for involving students in decisions regarding school-wide disciplinary procedures (Curwin & Mendler, 1988) and academic instruction (Glasser, 1986).

In summary, the client model of restructuring empowers children, parents, and other community members with a greater degree of control over schools' instructional goals and activities. Unlike the technical and professional approaches, it is not the experts, but the clients who dictate the specific results of educational reform. In this context, the technical and professional expertise of researchers and educators is directed primarily toward discerning client wants as well as finding ways to meet those wants within existing resource constraints (Elmore, 1991). Subsequently, schools may vary considerably in terms of subject-matter focus, discipline policy, teachers' roles and autonomy, etc., all reflecting the unique interests of consumers.

The field of applied behavior analysis is quite compatible with several dimensions of this model for school reform. The emphasis on providing educational *consumers* with more input into schools' goals and activities is highly consistent with technological aspirations to be *socially valid or acceptable*. Several recent proposals to expand the techniques and uses for social validity pertain directly to these recipients of educational interventions. For example, Hawkins (1991) proposes that consumer satisfaction reports be used as a basis for making adjustments or modifications in intervention procedures. Children are recipients of many instructional and behavior management techniques throughout a school day. Their reports about the acceptability and undesirable side effects of these procedures (i.e., low feelings of self-worth from repeated failures to learn, excessive teasing from peers, etc.) should be *actively* solicited by educational practitioners and researchers (Greenwood, 1981; Shafer, Egel, & Neef, 1984).

As indicated earlier, RAND researchers discovered that the primary users and consumers of educational innovations often adapt or modify a procedure to better fit their own needs and setting characteristics (Berman & McLaughlin, 1978). In a recent study, Kohler and Greenwood (1990) implemented a peer tutoring procedure with a class of 3rd and 4th grade youngsters. Three students combined several untrained or collateral tutoring behaviors (including prompts, praise, and assistance) with the core behaviors initially taught as part of the tutoring procedure. A multielement and reversal design indicated that these collateral behaviors functioned to increase the academic response rates and weekly spelling gains of four low achieving students. In essence, three 3rd grade girls altered or modified a

tutoring procedure in ways to increase its effectiveness for teaching spelling. Behavior analysts might continue to examine consumers' variations in their intervention procedures.

Researchers have utilized a range of strategies for involving consumers in the development of intervention goals and procedures. For example, Dow (1985) paired 42 socially inadequate college students with peers of the opposite gender to engage in dyadic social conversations. After interacting with the client for 10 minutes, peers rated the degree of change they would recommend on 13 specific categories of their partner's interaction style. Similarly, to identify the crucial components of effective conversation, Minken et al. (1976) observed 20 junior high to college-age females participating in dyadic social conversations. Videotapes of these conversations were then shown to adult judges, who were asked to rate each girl's social skillfulness on a seven point scale. Results indicated that the behaviors of asking questions and providing feedback were positively correlated with the highest social skill ratings.

In summary, the field of applied behavior analysis has examined numerous strategies for involving students and parents in the development of educational goals and procedures. An underlying assumption is that these consumers are not only the primary clientele, but the "*experts*" for making certain types of decisions about the acceptability of educational services and techniques. A promising area for collaboration between behavior analysis and the client model of school restructuring, then, is to continue to examine effective strategies for involving students, parents, and other community members in the development of educational goals, activities, and outcomes.

CONCLUSIONS

When it comes to improving educational outcomes for children, applied behavior analysis and the school restructuring movement have traveled parallel but separate tracks. Exactly what are the points of variance, and what do they imply for the future?

First, it is important to recognize that the two fields have served different principal constituencies. Applied behavior analysis has focused the vast majority of its attention on students with specific academic and/or behavior difficulties. School reform, on the other hand, is aimed at the *general* school population rather than any specific subgroup. Indeed, the President's current educational reform proposal makes no specific reference to children with disabilities (America 2000).

One can only speculate on the implications of these different constituencies at this time. As indicated earlier, some educators view the products of applied behavior analysis and other research as mechanistic or incompatible with the ways that children learn (Rowan, 1991). Certain procedures for improving children's academic and survival skills might be highly effective and acceptable to teachers of low achieving students from economically deprived and disadvantaged neighborhoods. These same procedures, however, may be viewed as inappropriate by teachers of higher achievers from affluent backgrounds. Perhaps their exclusive focus on low achievers partially accounts for behavior analysts' failure to examine higher order thinking and reasoning skills. We should recognize that many teachers make distinctions in learning styles, which are sometimes reflected in references to children as learning disabled, independent learner, self motivator, etc. Applied behavior analysts should consider the implications of these distinctions for teachers' resistance or adoption of their instructional technologies. Furthermore, behavior analysts might broaden their range of student constituencies to include average, high achieving, and even gifted students (Belcastro, 1985). A technology that meets the vast and diverse needs of *all* students rather than only the "unteachable" or "uncontrollable" ones should be more amenable to widespread diffusion within public schools.

The two fields also are influenced by divergent, and sometimes incompatible forces. The impetus behind much of applied behavior analysis is the scientific community. Of late we have invited consumers to *contribute* to our selection of problems to study, technologies to develop, and outcomes to produce (Wolf, 1978). However, scientific rigor and methodology continue to exert a significant, if not the primary impact on our research goals and activities. The school restructuring movement also is influenced by the scientific community, which is apparent in the technical model of reform. However, educational decision-makers must also respond to a political agenda, a labor movement, and a large constituent of concerned community members. Unlike applied behavior analysis, which invites, but controls the *degree* of consumer influence, educators must continually satisfy the strong and sometimes incompatible demands of teacher unions, parents, community members, politicians, etc.

Like the differing constituencies, this discrepancy in influencing forces also may account for the minimal impact that applied behavior analysis has made on the school reform movement. We have described three general models of educational restructuring. With the exception of the technical model, it is apparent that behavior analysis has made little or no impact on the school restructuring movement. Some educators suggest that teachers' judgmental knowledge is as essential to effective teaching as the

outcomes of educational research (Gideonse, 1991). Others have described some products of applied behavior analysis (and other educational research) as irrelevant, extraneous, and even inappropriate (Rowan, 1991). In any case, it is apparent that behavior analysis is not currently viewed as a viable strategy to improve public schools.

On the surface, then, it appears that the field of applied behavior analysis has minimal continuity with the movement to restructure American schools. Our contention, however, is that future collaboration is not only possible, but potentially beneficial to both fields. One key to this collaboration and contribution is *closer* and more systematic attention to all of the qualities in Table I. A primary theme of this paper is that applied behavior analysis has not completed, and in some cases, hardly begun an experimental analysis of its adoption. In essence, our field cannot begin to address questions about the relative importance of the qualities in Table I without their formal and systematic examination.

Greater attention to our list of "optimally adoptable" characteristics could provide three important benefits to applied behavior analysis. First, these efforts would ensure our likely contribution to efforts to improve American schools. Second, such efforts will clarify the functional relationship between these qualities and the dissemination and adoption outcomes that we desire so strongly. The list of "optimally adoptable characteristics" will undoubtedly change with the conduct of experimental studies. Finally, this research would likely make our technology even more "optimally adoptable" than the present one.

The field of school reform also stands to benefit from collaboration with applied behavior analysis. In the past, we have focused our primary efforts on technological effectiveness and generalizability. A concerted effort to ensure practicality, flexibility, sustainability, social acceptability, etc. should make our technology even more attractive and adoptable to educational consumers. In fact, we see no other educational technology that undertakes *any* effort to encompass or analyze the qualities necessary for its adoption. Educational administrators, practitioners, and consumers are offered an opportunity to *collaborate* with applied behavior analysts to develop a educational technology that serves the diverse needs of everybody.

Educational reformers stand to gain an even more important benefit from collaboration, however. The 13 characteristics in Table I are not limited to the technology of applied behavior analysis, but offer a methodological blueprint for developing and evaluating *any* attempts to improve American schools. More specifically, *all* school restructuring efforts, including those of the technical, professional, and client models, should have the characteristics of being applied, behavioral, compatible,

effective, etc. Furthermore, the relative worth or value of all efforts should be judged on how many characteristics they effectively encompass and satisfy. Reformers concerned with the dissemination of their technologies can benefit from borrowing the methodological blueprint illustrated in Table I. Similarly, decision-makers are provided with a blueprint for evaluating the relative effects and merits of different school improvement efforts.

The likely success or benefits of collaboration depend on several factors. Our experimental analysis of effectiveness and generalizability should be relatively easy to accomplish, since we have been focusing our efforts on these outcomes for the past several decades. However, the analyses of being decentralized, flexible, practical, inexpensive, simple, socially acceptable, sustainable, and technological will present a greater challenge. These analyses will require more than the mere assessment of these qualities; more than the identification of their critical dimensions; even more than the determination of their relationship to adoption. Ultimately, we must be able to develop carefully crafted and presented products that encompass more than one to three of these qualities. In short, being effective, practical, and technological is not sufficient if our procedures are not decentralized and sustainable within their local settings. Once again, we need not limit our efforts to developing or disseminating a *specific* instructional technology such as direct instruction, classwide peer tutoring, etc. Instead, we can offer a methodology for developing and evaluating the relative value of any or all educational reform efforts.

Applied behavior analysis should also expand its efforts *beyond* the development of instructional techniques for the classroom teacher. Successful dissemination efforts undoubtedly involve an array of organizational and management factors at the school building and district levels. Many of these factors have been discussed in the school reform literature, including the establishment of better staff development activities, effective monitoring and management of teachers' effectiveness, and the use of collaboration teams to facilitate and support teachers' adoption of instructional innovations. The more frequent and systematic examination of these variables can and should become a primary focus of applied behavior analysis research.

A primary theme of this paper is that applied behavior analysis has something to offer to all three models of school reform. The development of effective, practical, and generalizable instructional strategies meets the requirements of the technical model. A commitment to develop flexible procedures that are socially acceptable to teachers and decentralized to ensure their long-term sustainability should ensure our contribution to the professional reform model. Finally, our effort to involve students, parents,

and other indirect consumers in development of intervention goals, procedures, and outcomes is highly relevant to the client model. Meeting the diverse and sometimes incompatible needs of all of these models, and still maintaining a high degree of scientific rigor, puts applied behavior analysts in the position like that of the educational decision-maker who must satisfy the sometimes incompatible needs of several advocacy groups. Yet, our aspiration for adoption requires that we accept and meet this seemingly difficult challenge.

Finally, we must realize that data alone, that scientific credibility alone, that methodological eloquence alone, will not necessarily make behavior analysis a major player in the school restructuring movement. Too many political agenda and social forces already impact American education. We must, however, keep in mind that science, data, and rigor are our strengths and are what distinguish the potentially great contributions of applied behavior analysis to the movement to restructure American schools.

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