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ABSTRACT

This book contains 23 papers given at a 1987 Edmonton (Canada) conference. Papers have the following titles and authors: "Current Trends and Future Challenges in the Education of Students with Severe Handicaps" (Dick Sobsey); "How Often Do You Need to Collect Student Performance Data? A Study of the Effects of Frequency of Probe Data Collection and Graph Characteristics on Teachers' Visual Inference" (Gail Munger et al.); "The Social LIFE Game for Teaching Functional Social Competence: A Program Description" (Joanne Bertrand); "Language and Communication Applications for Microcomputers" (Kathy Howery et al.); "The Children's Project: A Residential Option for Children with Developmental Disabilities" (Judy Smith); "A New Life-Style for Persons with Severe Disabilities: Supported Independence" (N. J. Marlett and H. MacLean); "Ecological Inventories and Curriculum Development for Special Education in Developing Countries" (David Baine); "A Data-Based Curriculum and Program Monitoring System for Deaf/Blind, PMH Secondary Students" (Dorothy O'Shea et al.); "Assessment and Rehabilitation of Severely Socially Deprived Deaf Adults" (Michael Rodda, et al.); "Transition in Minnesota" (Barbara Troolin and James House); "On Campus: Integrating the University Environment" (Bruce Uditsky et al.); "Alternatives in Community Living and Functional Education: Parents Speak Out" (L. Wilgosh); "Better Ways to Build Educational Routines" (P. Carreiro et al.); "Critical Factors in the Prescription of Technical Aids" (Michael Saya); "The World of Work: Is There a Match between Vocational Preparation and Employer Expectations?" (L. Wilgosh et al.); "Adjustment of Adults to a Visual Impairment: Preliminary Findings" (Marion Allen); "The Effects of Joint Activity Intervention on Children's Pragmatic Language Skills" (Catherine McCarthy et al.); "Why Change Our Service Delivery in Special Education?" (Vivian Skakun); "Integration--How Can We Make It Work?" (Vivian Skakun); "Idiots Savants: Retarded and Gifted" (Carolyn Yewchuk); "Teaching Ecologically-Based Communication Skills to Persons Who Are Developmentally Delayed" (Susan Sousie); "Stress and Supports to Families with a Handicapped Child" (Linda McDonald et al.); and "Adjustment of Families with Handicapped Children" (L. Wilgosh et al.). (DB)

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Con' ents

Current Trends and Future Challenges in the Education of Students with Severe Handicaps

Dick Sobsey

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Abstract

This introduction briefly traces the sum of the relevant history of education, for students with severe handicaps, beginning with the first human operant conditioning experiment in 1949. It discusses some recent developments and issues in the field with a major focus on the movement toward an ecological approach to curriculum development. The field is in a state of flux and evolution. The chapters of this book represent the directions and diversity currently found in the education of students with severe handicaps.

This volume contains chapters based on presentations given at the Severe and Multiple Handicaps Alternative Futures Conference in Edmonton, Alberta, May 6, 7, and 8, 1987. The conference brought together more than 900 people concerned with the lives of people with severe and multiple handicaps and their families. The topics selected for inclusion represent the diversity of presentations at the conference. The topics also represent the broader focus of the conference: how far the field has progressed, and what its future directions may be.

Less than 40 years have passed since Paul Fuller (1949) published "Operant conditioning of a human vegetative organism" in *American Psychologist*. This brief account of the successful application of reinforcement procedures to train a multiply handicapped man to raise his arm seems primitive by today's standards. No truly experimental design was used. The skill developed does not appear to be functional. The terminology seems unacceptably stigmatizing. The underlying conceptualization of the subject as subhuman is totally unacceptable. This publication, however, so powerfully influenced the development of appropriate educational programs for students with severe disabilities that its appearance could be considered the birth of the field. The article exerted that influence in two ways. First, it shattered the myth of noneducability by demonstrating learning in a subject whom many experts had indicated was incapable of learning. Second, it established a long enduring relationship between applied behavior analysis and education of students with severe disabilities. Because this first published experiment in human operant conditioning used a subject with severe dis-

abilities, a tradition developed for selection of these individuals as subjects.

This resulting relationship between special education for students with severe disabilities and behavioral psychology generally served both fields well. A rapidly evolving behavioral technology steadily increased the power of instruction and brought more difficult behavior problems under control. These benefits, however, also resulted in new concerns and challenges.

First, the near total dominance of special education for people with severe disabilities by behavioral psychology limited the autonomy of the field and in the eyes of some observers reduced it to a handmaiden profession in which most important philosophy and procedures were imported from behavioral psychology. For some, this status has lingered despite the development of research and leadership within special education. For most others, however, the independence and credibility of the field of education of students with severe disabilities has been established over the last decade.

Second, the power of applied behavior analysis as an instructional technology was so great and its dominance over special education was so complete that it began to be seen as more than a tool for teaching. It was also viewed as a curriculum model that could suggest what the content of education should be This confusion over the role of behavioral technology was not a simple lack of understanding of the distinctions between curriculum content (what is taught) and instruction methods (procedures for teaching). After all, behavioral techniques had been used to challenge the previously dominant developmental model of curriculum content by demonstrating that the developmental sequence was not the only sequence for learning. The vacancy created by the departure of the developmental curriculum model had to be filled with something. Also, and perhaps more importantly, the selection of content for education was, in fact, often heavily influenced by the instructional technology available. Content was frequently selected because it was easily measurable, available for reinforcement, or consistent with task analysis. Thus curriculum content was heavily influenced by behavioral teaching methods For a significant period of time, a more precise and intentional curricular focus lagged behind instructional technology leaving the field without clear direction.

Third, some desirable behavior changes were not easily accessible through currently evolving instructional approaches. As the field progresses, better methods are making some behavior changes more accessible, but others remain out of reach. This does not imply that future evolution of behavioral techniques cannot hope to address these concerns. It merely implies the current limits and the sum of the untoward

effects that have resulted from these techniques. For example, behavioral instruction has been extremely valuable for teaching students with severe disabilities to respond to communication initiated by others and to comply with teachers, parents, and other caregivers. However, it has generally failed to teach self-initiated communication and appropriately assertive behavior. In fact, the performance of students with severe handicaps appears to deteriorate in these areas as a direct result of current training methods. It is not surprising, for example, that students, trained to generalize compliance indiscriminately and communicate only in response to others' requests, experience substantially increased risk for physical and sexual abuse. This does not necessarily mean that the entire approach has been in error. It does mean that one must constantly be alert to all of the direct and indirect effects of intervention and refine it to adjust to each new concern encountered.

In the last decade, an ecological model of curriculum has developed. It suggests selection of program content based on the requirements of current and potential future environments. Behavioral techniques are seen as one method (still the most common one) for teaching these requirements. One focus becomes facilitation of normal, age-appropriate behavior and transitions to less restrictive future environments. The second focus becomes preventing transitions to more restrictive environments that might result from a lack of critical skills required in the current environment. The approach is also consistent with a philosophy that defines the purpose of education for all children as preparation of the individual for a role in society. Although the field is still in the early stages of developing methods of applying the ecological model, the general direction is well established. Even though the ecological model of curriculum is very compatible with behavioral instructional technology (the ecobehavioral emphasis in behaviorism reflects an increasing recognition of environmental influences), the ecological model has helped to establish an independent identity for education of students with severe disabilities.

Increasingly, classroom integration has been advocated as the most appropriate strategy for accomplishing the purpose of ultimate adaptation to society. Over the four decades that this field has evolved, the concept of integration has also taken on new meanings for many. Forty years ago almost all students with severe disabilities were excluded from all educational services. Thirty years ago, emerging educational services were rare and provided only in segregated settings. Twenty years ago, some schools were beginning to provide services. Ten years ago, integrated education typically meant a self-contained classroom in a regular school. Today, students with severe disabilities are increasingly served in regular classrooms with other students of the same age. The

full impact of total integration programs cannot be evaluated yet, but it is increasingly clear that integration will be accompanied by its own challenges and concerns.

Some of the previously common and effective instructional methods used in segregated classrooms are not easily applied in integrated settings without substantial modification. Some advocates of integration see the environmental immersion that is naturally provided by fully integrated education settings as an adequate instructional medium and consider no other instructional technology necessary. Other people may be concerned that integration is essential as curriculum but that it will be inadequate as an instructional method. They fear that the same type of error will be made as in the past with behaviorism—a confusion between content and methods. The ultimate success or failure of fully integrated education for students with severe disabilities may depend on the identification and development of compatible and effective instructional techniques.

Service delivery systems will also require further development to accommodate fully integrated education and other developments in the field. The transdisciplinary service model (in which professionals release some of their traditional roles, and a single individual serves as primary interface between the student and other team members) has been advocated by most experts in the field. Successful implementation of this model on a large scale will require substantial changes in administrative structures. Currently, education, health care, and social service professionals are most often responsible for separating agencies with differing procedures, standards, and administrative structures in a manner that is inconsistent with efficient teamwork. Often the individual who works most closely with the client is not fully empowered to make critical decisions, thus creating further difficulty in fully applying the transdisciplinary model. The successful coordination of services at the highest levels of authority may be a key to the ultimate success of the transdisciplinary model. This coordination may prove particularly difficult if economic factors create a climate of restraint and service withdrawal. Under these conditions, agencies may be tempted to try to shift responsibility for services to other involved agencies.

Future challenges also exist in secondary and adult education The first generation of students with severe disabilities that received elementary education in community schools is now reaching adulthood. Their expectations, along with those of their parents and advocates, have been raised by the availability of services during childhood. Higher expectations are creating a strong demand for secondary and adult services of at least equal quality. This demand is just beginning to be met. Innovative university and technical college-based programs are develop-

ing, along with increased support for competitive employment options. Middle and high school programs are becoming more common and are evolving to meet the unique demands of these settings. These programs present additional challenges related to (a) the greater independence expected of students as they become older (b) the typically widening gap between the performance of students with severe disabilities and their age peers, and (c) the shifts in curriculum and instructional delivery methods that typically take place in higher grades.

With this multitude of challenges (and many others), it is not surprising that leadership in our field is divided over many issues. Some professionals argue for the use of aversive procedures to control highly aggressive, self-destructive, or disruptive behavior. Others argue that aversive treatments are abusive and no more effective than less intrusive alternatives. Some people believe that all effort should be made toward improving community services and that institutional service enhancement should be given low priority because it is outmoded and will soon be obsolete. Others argue that even if all people with severe disabilities can and should be served in a community environment, many thousands of the most severely disabled continue to live in institutions and require as much assistance as can be provided until they are repatriated to their natural communities. Some people believe that fully integrated educational programs are the best alternative for every student and that integration is sufficient to serve as a service delivery model, curriculum, and instructional strategy, all in one. Others believe that some students are still best served in self-contained classrooms, or that integration will require new or refined instructional strategies to be successful

Such diversity of opinion is not necessarily an indication of problems in the field. This state of flux is probably desirable to prevent stagnation and to allow further progress.

It is against this background that the Severe & Multiple Handicaps: Alternative Futures Conference was held and that the chapters included in this volume were written, selected, and edited. Together they not only communicate how far we have come in the last four decades, but also help us begin to see what may await us in the emerging future.

How Often Do You Need to Collect Student Performance Data? A Study of the Effects of Frequency of Probe Data Collection and Graph Characteristics on Teachers' Visual Inference

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Abstract

Teachers often rely on visual analysis of graphed student performance data to evaluate progress and to make program decisions. However, because collecting data can be time consuming and interfere with instruction, teachers would like to know how much data is necessary to make reliable judgments. To investigate the effect of frequency of data collection on teachers' judgments and decisions, this study addressed the question of whether teachers' judgments differ according to frequency of data collection and type of trend. The study also investigated whether teachers' judgments, based on different types of graphs (ascending, descending, flat or variable) vary with the frequency of data collection. A set of 16 graphs of actual student performance data was analyzed by 59 teachers of students with moderate to profound handicaps. The resulting data were analyzed by a two-factor repeated measures design. The results indicated that when asked to evaluate student performance, teachers' judgments tended to be consistent and accurate when the graphed data represented continuous and systematic improvement in performance. However, when the data represented a decrease in performance, no change, or highly variable performance, teacher judgments tended to differ according to the frequency of data collection. When asked to make program recommendations, teachers' judgments tended to differ according to the frequency of data collection for all types of trends.

Teachers often rely on their visual analysis skills to read and interpret graphs of student performance data and to monitor the effects of instructional programs. Based on such analysis, teachers may decide whether to change an intervention program or determine what changes are most likely to improve the students' performance of a target behavior.

There are, however, many factors that may distinguish teachers' visual analyses of data from the analyses performed by researchers and other professionals trained to read and interpret graphs. For example, teachers usually examine AB (baseline-intervention) data, whereas conventional visual analysis is customarily taught and practiced using single-subject designs (Parsonson & Baer, 1986). Even when teachers have received training in the visual analysis of data, the training has generally not included the interpretation of single-subject designs. Furthermore, teachers must often collect and analyze data under significant time pressures amid the general confusion common to many classrooms.

On the other hand, a teacher's ongoing participation in instruction and involvement with students is likely to produce additional clues regarding a particular subject's learning trend (Utley, Zigmond, & Strain, 1987) and may lead the teacher to discount or ignore data regarded as inaccurate (Grigg, 1986). Any of these factors may strongly differentiate a teacher's visual analysis of data from that of a researcher.

The literature on visual analysis has repeatedly demonstrated the problem of "interpretive inconsistency," regardless of who is examining graphed data (college students, teachers, researchers, behavioral journal reviewers, etc). There is substantial disagreement in the judgments made about the trend of the data viewed and about the functional relationship existing between the intervention and the target behavior. White (1971) found that teachers trained in visual inspection interpreted identical data differently to the extreme of disagreeing about whether graphs were ascending or descending. Jones, Weinrott and Vaught's (1978) findings showed that there was essentially no consensus regarding treatment effects among 11 skilled behavior analysts viewing published data from a respectable journal; their mean interjudge reliability coefficient was 0.39 with a range of 0.04 to 0.79.

Finally, DeProspero and Cohen (1979) obtained a modest, mean, interrater agreement correlation of 0.61 when reviewers of behavioral journals inspected graphs illustrating four influential factors: both pattern and degree of mean shift, within-phase variation, and trend. The four graphic factors studied appeared to influence judges interactively, not singly, emphasizing the complexity of visual analysis even under highly controlled conditions with trained judges.

For teachers to evaluate performance and to make appropriate program recommendations, it is necessary that they be able to analyze accurately whether a student's performance is improving, deteriorating, or remaining the same. In a study examining the effects of the form of data documentation and the type of trend on the ability of teachers to

analyze the trend in frequency data, Utley et al (1987) considered three trends (upward, level, and downward) and four levels of documentation, ranging from observation only to a combination of observation, raw data, graphs, and a six-day line of progress. Although the main effect for level of documentation and interaction between level of documentation and type of trend were found to be significant, the main effect for type of trend was not. All subjects were able to analyze upward trends accurately, but those in the "observation only" group were unable to analyze level and downward trends accurately. When any form of data was provided, the difference in accuracy across groups tended to be relatively small.

The findings of Utley et al. (1987) further confirm the necessity of collecting and analyzing data to evaluate student performance. However, these authors also found that as the amount of documentation increased, the accuracy of trend analysis did not increase concomitantly. This observation may suggest that further research is needed to determine whether sophisticated data analysis strategies do in fact improve the accuracy of trend analysis, and what effect frequency of data collection has on the accuracy and reliability of visual inference.

Teachers using visual analysis are likely to make more frequent errors if they have inadequate data on which to base a decision (Parsonson & Baer, 1986). Yet, it is far from clear how much data, probe or training, is necessary to make reliable judgments. The demands of teaching limit the amount of time available to all teachers for data collection, and when their students have moderate to profound disabilities, teachers have additional considerations. For example, the collection of training data, essential for making accurate day-to-day instructional decisions, may interfere with the use of "hands-on" systematic prompting procedures; the collection of probe data (under criterion conditions of no reinforcement or assistance) means a reduction of instructional time; the extension of baseline conditions to eliminate variability in a student's performance, or reversing to baseline conditions to demonstrate control, can result in a delay of treatment or a threat to improvement; and the collection of probe data in the community, where a majority of school-age instruction must take place to promote generalization, increases the number of potentially dangerous and stigmatizing situations the student experiences. These factors, which must be considered when teaching students with extensive disabilities, act to reduce the data available for analysis.

In a review of community-based research concerning students with severe disabilities, Snell and Browder (1986) found that when training was conducted daily, probe data were collected approximately once a

week. So while these researchers examined both types of data to judge experimental effects, they generally had only one fifth the amount of probe data as training data.

Several studies have examined whether a reduced frequency of data collection yields adequate data for teachers to make consistent judgments about student progress or decisions about program changes. Bijou, Peterson, Harris, Allen, and Johnston (1969) studied the effects of varying the frequency of observations or data collection and found that sampling every other day beginning with the first session, sampling every other day beginning with the second session, and sampling every third day beginning with the first session yielded results that only slightly deviated from those attained when data were collected daily.

The effect of frequency of data collection and graph characteristics on visual inference was investigated by Munger and Loyd (1987). They reported that teachers tended to agree in their judgments regarding student progress and their decisions about program changes when performance data represented systematic improvement, but when graphed data represented a decrease in performance, no change, or highly variable performance, judgments tended to differ according to the frequency of data collection.

To investigate further the effect of frequency of data collection on decisions or judgments, this study replicated that of Munger and Loyd (1987) in addressing the questions of whether teachers would make similar decisions when student data was obtained each day, three times a week, twice a week, or once a week, whether different trends on graphs (ascending, descending, flat or variable) produced different judgments, and whether judgments based on different frequencies of data collection vary with the characteristics of data such as variation and trend

Method

Graphs

To answer the research questions, four graphs of actual student acquisition data were selected from intervention programs of students with moderate to profound mental retardation The graphs represented student performance of functional, multiple-step skills. The horizontal axis of each graph represented 60 days of data collection with baseline and intervention phases indicated. The vertical axis of each graph represented the percent of steps correctly performed by students during probe (test) observations of the target skills.

The four graphs were selected to illustrate four different trends: one graph showed an ascending trend (improvement in performance); one

showed a descending trend (decline in performance); one graph represented neither an ascending nor descending trend but tended to be flat; and one represented neither an ascending nor descending trend but was variable, showing both advances and declines across the 60 days of data collection (see Figure 1). The trend of each graph was determined by statistical inference (testing for significant slope) and professional judgment.

Because teachers tend to change programs in which student performance is clearly decreasing, no graphs were located which represented a descending trend across 60 days of data collection. Therefore, a graph with 40 descending data points was selected to illustrate a descending trend; several nondescending data points were eliminated and additional descending points included in order to create a descending graph representing data collected across 60 days.

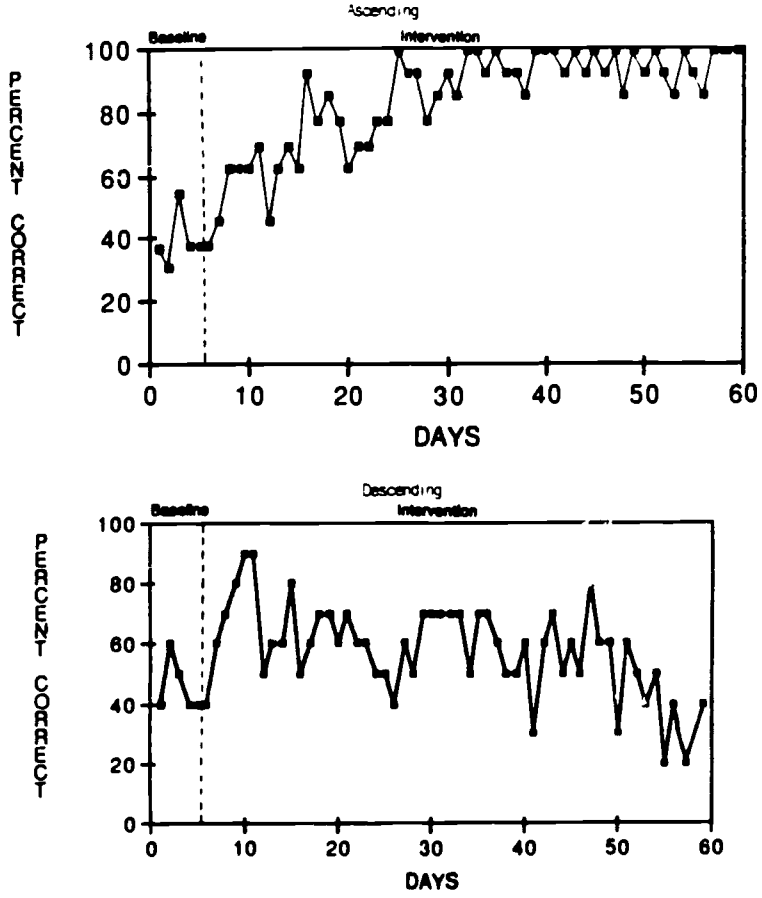

Figure 1: Graphs used to represent skill acquisition data collected five times per week and illustrating four trends: ascending, descending, flat, and variable

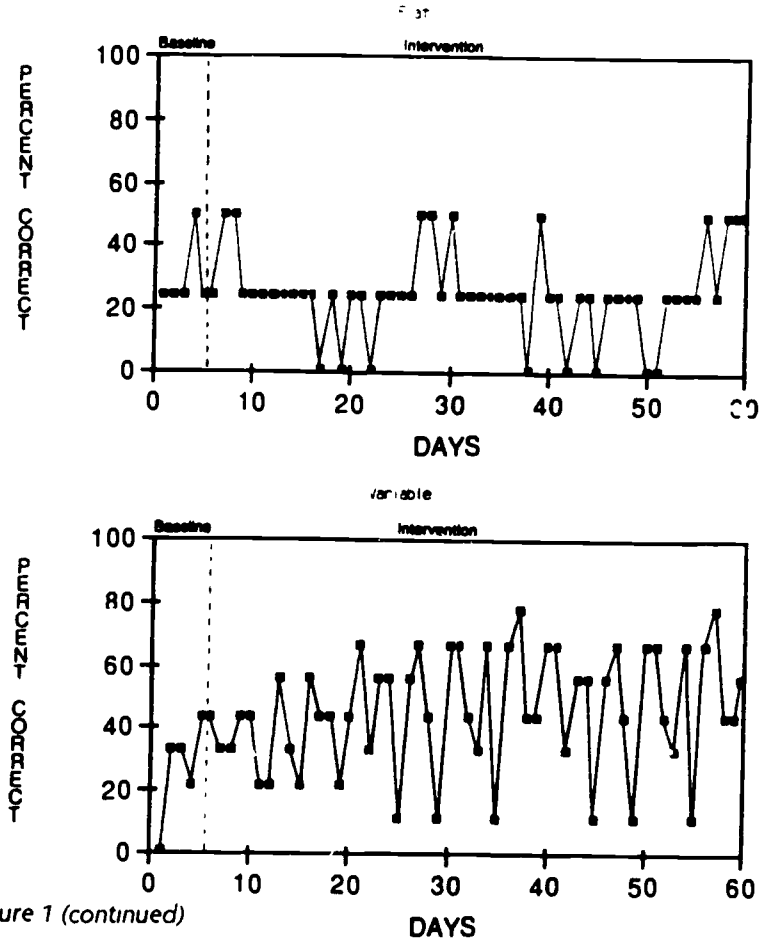

Figure 1 (continued)

From each of the original four graphs which represented data collected five times a week, three additional graphs were created to represent the sets of data as they would appear had the student performance data been collected three times a week, twice a week, and once a week. To create the 12 additional graphs, data points were selected as follows: to create the graphs representing data collected three times a week, only data collected on Mondays, Wednesdays, and Fridays across the 60 days were graphed; to create the graphs representing data collected twice a week, only data collected on Tuesdays and Thursdays across the 60 days were graphed; and to create the graphs representing data collected once a week, only data collected on Wednesdays were graphed. All graphs retained four days of baseline data.

The set of 16 graphs was arranged in a random sequence and analyzed by 59 randomly selected teachers of students with moderate to profound handicaps. The only information provided to the teachers was contained in the instructions which read as follows:

> These graphs represent actual performance data obtained from students with severe handicaps Each graph summarizes three months of probe (not prompted or reinforced) sessions in skill acquisition programs The vertical axis shows the percentage of steps performed correctly on a task-analyzed skill and the horizontal axis shows days on which the probe sessions were implemented
>
> For each of the graphs that follows there are two questions For the first question, check the statement that best describes the student performance represented by the graph For the second question, check the statement that would most accurately reflect the program decision that you would make Please make the best decision you can based on the information in the graph

Teachers

The 59 teachers, employed by public school programs in eight states, were selected by seven university faculty members operating training programs for teachers of students with severe handicaps, and two directors of programs for students with severe handicaps. The Bachelor's degree was the highest degree of education attained by 66% of the teachers; the Master's degree was the highest degree of education attained by 31%; and 3% had completed the Education Specialist degree. Ninety-five percent of the teachers had received training in systematic instruction and data collection. Experience in teaching students with moderate to profound handicaps ranged from one to 19 years. The mean was 6.1 years. Eighty-eight percent of the teachers indicated that they collected training data daily; only 10% collected probe data daily.

For each graph, teachers were asked to evaluate the progress of the student by selecting one of five statements to describe the student's performance as represented by the graph:

1. definitely making progress;
2. probably making progress;
3. staying about the same;
4. probably decreasing in performance;
5. definitely decreasing in performance.

Teachers' judgments regarding student progress were assigned values from one to five respectively.

For each graph, teachers were also asked to make a program recommendation based on the student's performance as represented by the graph:

2 probably continue the program;

3. probably change the program;

4. definitely change the program.

Teachers' program decisions were assigned values from one to four respectively.

A two-factor, repeated measures design was used in the analysis of the data. The first factor was type of graph, with four levels: ascending, descending, flat, and variable. The second factor was frequency of data collection, with four levels: five, three, two, and one times per week. The dependent measures were: (1) student progress, as measured on a five-point scale from definitely making progress to definitely not making progress; and (2) program recommendation, measured on a four-point scale from definitely continue program to definitely change program.

The hypotheses of interest were whether different frequencies of data collection produced different teacher judgments and decisions, whether different trends on graphs produced different teacher judgments and decisions, and whether there was an interaction between type of graph and frequency of data collection.

Results

The means of the teachers' ratings of student progress and program decisions for the four types of trends and four frequencies of data collection are presented in Table 1 and Figures 2 and 3. The group means of teachers' ratings for the four graphs depicting an increase in performance or ascending trend were 1.089 for student progress (1=definitely making progress) and 1.208 for program decisions (1=definitely continue the program). The group means of teachers' ratings for the four graphs with a downward or descending trend were 3.890 for student progress (4=probably decreasing in performance) and 3.474 for program decisions (4=probably change the program). The group means of teachers' ratings of the four graphs that were generally flat, depicting no change in performance across the 60 days, were 2.809 for student progress (3=staying about the same) and 3.152 for program decisions (3=probably change the program). The group means of teachers' ratings of the four variable graphs were 2.534 for student progress (3=staying about the same) and 2.847 for program decisions (3=probably change the program).

The group means of teachers' ratings of student progress based

on performance data collected five times a week, three times a week, twice a week, and once a week also varied only slightly, ranging from 2.623 to 2.737.

The results of the two-factor analysis of variance procedure using type of graph and frequency of data collection as the independent variables and student progress ratings as the dependent measure are presented in Table 2. Main effects for type of graph and frequency of data collection and interaction effects were all statistically significant at the .05 level.

The results of the two-factor analysis of variance procedures using type of graph and frequency of data collection as the independent vari-

Table 1
Means of Ratings of Student Progress and Program Decisions by Type of Graph and Frequency of Data Collection

Type of Graph	Teacher Decision	
	Student Progress (1-5 Scale)	Program Decision (1-4 Scale)
Ascending		
5 times/week	1.034	1.085
3 times/week	1.136	1 373
2 times/week	1.017	1 068
1 time/week	1.169	1.305
Descending		
5 times/week	4.119	3.542
3 times/week	3.932	3 508
2 times/week	4.356	3 627
1 time/week	3.153	3.220
Flat		
5 times/week	3 068	3.559
3 times/week	2.424	2 627
2 times/week	3 186	3 525
1 time/week	2.559	2 898
Variable		
5 times/week	2.373	2.576
3 times/week	2.508	2.983
2 times/week	2.441	2 729
1 time/week	2.814	3.102

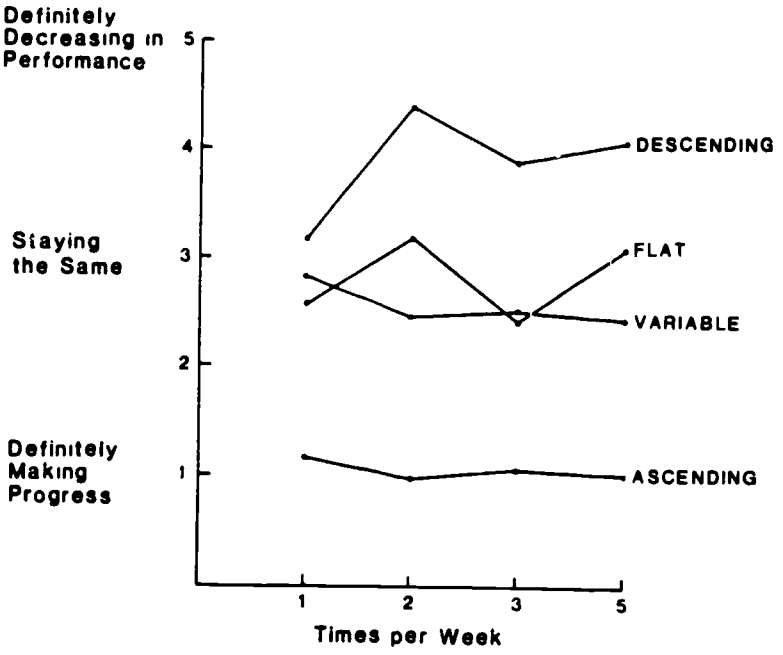

Figure 2: Mean ratings of student progress by graph type and frequency of data collection

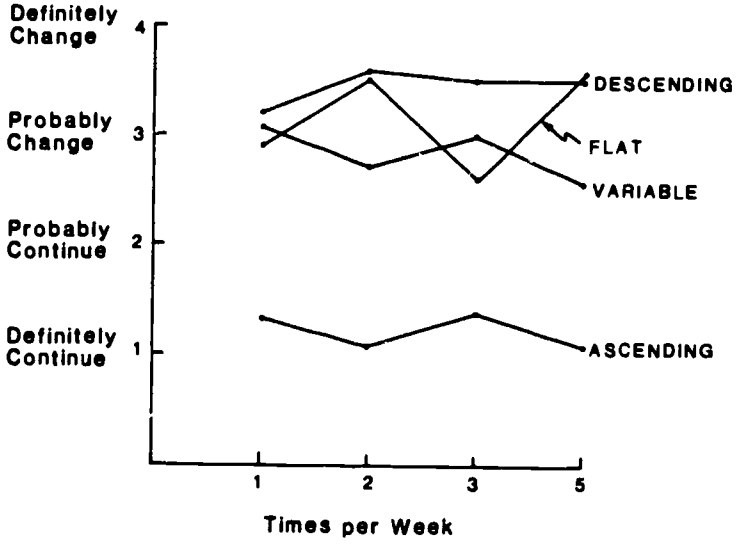

Figure 3: Mean ratings of program decisions by graph type and frequency of data collection

ables and teachers' program recommendations as the dependent measure are presented in Table 3. Main effects for type of graph and interaction effects of type of graph and frequency of data collection were again found to be statistically significant at the .05 level. Main effects for frequency of data collection were not significant.

Tukey's follow-up procedures were used to examine main effects of type of graph (ascending, descending, flat, and variable) on teachers' assessments of student progress. The analysis indicated that teachers generally were able to distinguish between the types of trends, as was

Table 2
Summary Table for Two-Factor Repeated Measures Design for Ratings of Student Progress by Type of Graph and Frequency of Data Collection

Source	DF	MS	F
Type of Graph	3	314.155	440 71*
Subject by Type	174	713	
Frequency	3	5.065	14 26*
Subject by Frequency	174	.355	
Type by Frequency	9	7.264	25.17*
Subject by Type by Frequency	522	.289	

*p<.05

Table 3
Summary Table for Two-Factor Repeated Measures Design for Program Decisions by Type of Graph and Frequency of Data Collection

Source	DF	MS	F
Type of Graph	3	239 950	345 52*
Subject by Type	174	694	
Frequency	3	682	1 78
Subject by Frequency	174	.383	
Type by Frequency	9	6 204	18 27*
Subject by Type by Frequency	522	.340	

evidenced by significant differences in the mean ratings Only the difference in mean ratings between the flat and variable graphs was not found to be statistically significant In contrast, post-hoc procedures examining main effects of frequency of data collection indicated that the only significant difference between level means in the pairwise comparisons was between teachers' ratings of student progress as represented by data collected twice a week and ratings of student progress as represented by data collected once a week.

Post-hoc procedures examining interaction effects of type of graph and frequency of data collection indicated that when student performance data represented an ascending trend or systematic improvement, there were no significant differences between level means. That is, when the graphed data clearly represented an increase in student performance, teachers' assessments were similar when data were obtained each day, three times a week, twice a week, or once a week. When the graphed data represented a decrease in performance, no change in performance, or highly variable performance, several of the differences in means were statistically significant. When the trend of the student performance data was not ascending, teachers' ratings based on data obtained only once a week tended to be different than those based on data collected more frequently.

In examining main effects of type of graph on teachers' program decisions, follow-up procedures indicated that decisions based on graphs representing systematic improvement in performance were significantly different than decisions based on the other three types of graphs. Decisions based on graphs representing a decrease in performance were also significantly different than those based on variable graphs.

The results of follow-up tests examining interaction effects of type of graph and frequency of data collection on teachers' program decisions are somewhat unclear. When the graphed data represented an ascending trend, two of the six pairwise comparisons between level means were found to be statistically significant. However, these differences did not appear to be systematic. When the graphed data represented a decrease in performance, no change in performance, and highly variable performance, several of the differences in means were statistically significant. Although these differences also did not appear to be clearly systematic, program decisions based on data obtained only once a week tended to be different than those based on data collected more frequently.

Discussion

The three questions addressed within the two-factor repeated measures design were:

1. Do teachers' judgments and decisions differ according to type of trend?
2. Do teachers' judgments and decisions differ according to frequency of data collection?
3. Do teachers' judgments and decisions based on different types of graphs vary with frequency of data collection?

The results of the two-factor analysis of variance and subsequent follow-up procedures suggest that teachers' judgments and decisions do tend to differ according to type of trend. When teachers were asked to assess student progress, the ascending and descending conditions were found to be significantly different from each other and from the flat and variable conditions. When teachers were asked to make program recommendations, the ascending condition again was found to be significantly different from the other three conditions, and the descending and variable conditions were significantly different from each other. These findings suggest that teachers are able to distinguish between most trends and can clearly distinguish ascending trends from other types. The ability of teachers to distinguish between trends of graphed data is an important skill, as the use of graphs to make instructional decisions is largely dependent upon this ability.

The absence of significant differences in the mean ratings of teachers' judgments and decisions when presented with graphs that did not represent a systematic improvement in performance may be, at least in part, a function of the nature of the rating scales. When presented with flat and variable graphs, in which student performance was neither systematically improving nor decreasing, teachers tended to evaluate performance by making a single choice: "staying about the same." When asked to make a program recommendation based on graphs that did not represent an ascending trend, but were descending, flat, or variable, teachers also tended to select one choice: "probably change the program." Although the differences between mean ratings of program decisions for the descending and variable graphs were significant, those between the descending and flat, and flat and variable graphs were not.

The results of testing the main effects of frequency of data collection were mixed. When teachers rated student progress, the main effect for frequency showed that the differences were statistically significant. However, when teachers made program recommendations, the main effect for frequency of data collection was not found to be significant.

When teachers were asked to evaluate student progress, and the performance data were ascending, the results were clear and consistent with the findings of Munger and Loyd (1987). That is, when student

performance data represent systematic and continuous improvement, teachers' judgments were similar whether probe data were collected daily, three times a week, twice a week, or once a week. These findings suggest that when a student is clearly making progress, it may be necessary to obtain probe data only once a week to evaluate performance. These results support the findings of Utley et al. (1987) who reported that when students demonstrated an increase in performance, subjects were able to analyze ascending trends with approximately equal accuracy, regardless of the amount of documentation (e.g., observation only vs. raw data vs. data in graphic form).

When teachers were asked to make program decisions and the performance data were ascending, the results were less clear. Munger and Loyd (1987) reported that when graphed data represented a systematic improvement in student performance, teachers' decisions were similar when data were collected each day, three times a week, twice a week, or once a week. By contrast, this study found that teachers' decisions tended to differ by frequency of data collection for all types of trends.

When the graphed probe data represents a decrease in performance, no change in performance, or highly variable performance, teachers' judgments as well as program decisions tend to differ by frequency of data collection. When the trend of the student performance data is not ascending, ratings based on data obtained only once a week tend to be different than those based on data collected more frequently. These results are consistent with those of Munger and Loyd (1987) who also found that when the treatment was descending, flat, or variable the majority of the significant differences in means occurred between ratings based on data collected once a week and the other three frequencies.

The results of the current and previous (Munger & Loyd, 1987) studies suggest that when the graphed probe data clearly represent systematic and continuous improvement in student performance, it may not be necessary for teachers to collect data more than once a week to assess student progress. However, when the graphed probe data represent a decrease in performance, no change in performance, or highly variable performance, this study suggests that data be collected more often than once a week, as teachers' judgments and decisions are not the same when based on data collected once a week and data collected more frequently.

These findings should be welcomed by classroom teachers. When probe conditions are similar to those used in this study (no reinforcement, error correction, or prompting given), students tend to learn little about the target skill during the probe. Thus, obtaining the minimum amount of probe data necessary to make consistent judgments and

decisions is desirable. Also, since time spent collecting probe data reduces the amount of time available for teaching students, a decrease in probe frequency might provide more time to teach

However, there is one situation in which teachers may want to increase rather than decrease the frequency of probe data collection, even though the graphed data represent systematic improvement. This situation concerns the accomplishment of IEP objectives. When objectives are written with criteria specifying a certain degree of accuracy over a period of consecutive days of probe performance, teachers may want to increase the frequency of data collection as student performance approaches criterion. This will enable criterion performance to be documented more quickly than if infrequent probes, as recommended by the results of this study, are continued throughout the intervention phase.

This study suggests that it may be necessary to collect probe data more frequently than once a week to obtain consistent judgments when student performance data do not represent an ascending trend. Although probe conditions are clearly less conducive to learning than are training conditions, an increas in the frequency of probe data collection may enable teachers to have more confidence in their judgments and program decisions than if data were obtained only once a week.

These results leave many unanswered questions. First, when teachers collect, but do not graph, probe data, it remains uncertain whether these results apply, since the results are based on the visual analysis of graphed data. When teachers do not graph their probe data, judgments of trend are more difficult and the applications of those findings may yield more disagreement in teachers' judgments. Second, it is not clear whether these findings, based on graphed *probe* data, can be generalized to graphed *training* data. The teachers in this study indicated that, for the same programs, they collected training data more often than probe data. Because many teachers feel that data collection during teaching interferes with their effectiveness (Holvoet, O'Neil, Chazdon, Carr, & Warner, 1983), it would be useful to them to know whether they could collect training data less often during instructional sessions and still have confidence in their judgments and program decisions.

Finally, it remains unclear as to the amount of data a teacher must have or how long a teacher must wait to determine the trend of a graph and apply appropriate decision rules. Although this study used graphs which extended across a period of 60 days, those graphs representing data collected once a week had only 11 data points. Further research would be necessary to determine whether the findings of the present study would apply when teachers examined data collected across only 11 days. Although the practice of White and Haring (1980) and others

(Browder, 1987; Browder, Liberty, Heller, & D'Huyvetters, 1986; Liberty, 1972, 1985) is to examine five to 10 days of graphed data before making a decision based on trend, more research is needed to determine whether teachers' judgments would follow the same patterns revealed in this study if the data spanned a shorter period of time and if the graphs represented fewer data points.

Notes

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3. Requests for reprints should be sent to Martha E. Snell, Curry School of Education, 405 Emmet Street, Charlottesville, Virginia 22903.

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The Social LIFE Game for Teaching Functional Social Competence: A Program Description

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Abstract

Social LIFE refers to Social Learning of Independence through Functional Experiences. The game-style approach is used as a means of developing new social skills in a variety of settings and social situations and is to be enjoyed by both the players and the mediator (instructor). Appropriate responses to the game situations in which individualized target behaviours performed are rewarded by points or play money. Target behaviours or weak social skills are determined through various assessment devices such as behavioural surveys, interviews, and ecological inventories. There are four card categories—give and take, right or wrong, fill-in, and role-play—in which the target behaviours are presented. Playing procedures include directions for moving around the board, time considerations, and suggestions for reinforcing the winners. Effective teaching techniques include instruction, descriptive feedback, positive reinforcement, practice, role-play, and active problem solving. Correct and incorrect responses are recorded by the mediator, and criterion is achieved when given behaviours reach 80% for three consecutive games. An important part of the process includes generalization or transfer of skills from the game situation to real life settings. The skills can be practiced in both mediated and nonmediated environments with the aid of the mediator.

Social LIFE refers to Social Learning of Independence through Functional Experience. The Social LIFE model is an effective, nonthreatening, and highly enjoyable game-style approach to developing new social skills. It is enjoyed by both players and the mediator (instructor), and much can be learned about social skills if it is played properly. Using this approach, a wide variety of skills have been established for a variety of settings and social situations such as work, school, home, with family, friends, intimate relationships, as well as within the community.

How Social LIFE Works

The objective of the game is for each player to advance around the board in a counter-clockwise direction and to amass points or play money by responding appropriately to situations which present individualized target behaviours. The game provides a teaching modality that is both

motivating and fun The teaching techniques used in the game reflect those that social skills research has demonstrated to be most effective: instruction, descriptive feedback, positive reinforcement, practice, role-play, and active problem solving The combination of these approaches in training is most effective in achieving skill acquisition and generalization gains.

The Mediator

The role of the mediator is to direct attention to various features of modelled interactions in order to focus group assessment, engage the group in active problem thinking and prompt good reinforcement. As can be seen from the above description, the mediator is important to the success of the game. The mediator should be someone whom the players know, who knows the natural environments for which the social skills are intended, who is familiar with the strengths and needs of each player, who is involved in setting up, conducting, and generalizing the game, and who is familiar with the rules of the game. Most important, the mediator must be trained in the instruction techniques described above.

The Setting

The game is usually played in a familiar setting such as at home, school, or work. In ideal circumstances, the game is played in several natural environments using examples typical to that setting and natural reinforcement for the targeted behaviours. The setting should be comfortable and relatively free of distractions. The game is played on a table so that all players can have access to the game board and reach the cards.

The Players

As peer interaction is important, the game is most effective when played by three to four persons who have social contact and who work, live, or socialize together The mediator can be a player. Criteria for being a player include the ability to both communicate (verbally or nonverbally) and learn to role-play (pretend), unless used in a family situation. It is preferable if the players are of the same age group. However, it is not advised that all players have the same behavioral needs because part of the function of the group is that the peers act as models and teachers

Target Behaviours

The game situations used to teach are based on specific target behavioirs for each of the players. The situations may be taken from circumstances similar to those that have occurred or could occur within the range of possible life experiences of the player(s). Particular situations are chosen in which the client has experienced problems because of

a lack of skills, the expression of an inappropriate response, or because the situations represent antecedents that may have occasioned an inappropriate behaviour to occur.

Assessment of the individual's social skills can be made in a number of ways We suggest all three be employed

Behavioural Surveys

There are numerous behaviour scales and checklists available on the market The one we found to be the best was the Structured Learning Skills Checklist (Goldstein, Sprafkin, Gershaw, & Klein, 1980). The Edwards Sociosexual Scale and the Tymchuck Social Behaviour Inventory provided areas of assessment of relationships and responsibility that were missing in most assessment measures

Interviews

The client and his caregiver are interviewed Strengths and needs are identified in order to delineate where, under what conditions, and with whom problem situations occurred. Specific situations are described in detail so that variations on these situations can serve as a basis for teaching. For each client up to six behaviours are targeted. Other targets can be set once these behaviours have reached criteria. The areas of communication, relationships, problem solving, and decision making are also examined in the context of the client's day.

Ecological Inventories

Behavioural observations of each of the target behaviours can be conducted in two ways First, a traditional functional analysis baseline can be completed prior to training. In this baseline, a record is kept of the frequency of the target behaviour, the situation and conditions in which it occurred (antecedents), and the consequences that took place. Because most behaviours will be low frequency, this record is kept for at least two weeks Second, the mediator may arrange a situation where the target behaviour would likely occur and then observe how the individual handled the situation compared to how someone without the problem would handle it In this latter observation, we are attempting to understand the nature of the client's discrepancy from other individuals. This more detailed analysis of the specific components of the target behaviour allows the mediator to evaluate how specific (i.e., how small the steps in the task analysis) the game situations need to be in order to teach the new skill. This latter step is also important for the mediator to identify objectively that the individual's behaviour is not being changed arbitrarily but because the behaviour is so discrepant from other persons in the same setting that social stigmatization could

occur It is vital to note that the client must be in agreement that these behaviours are perceived as problems and thus are in need of change.

Before the first session, the mediator should run through each of the cards and record whether the player is able to respond correctly or incorrectly. Of the approximately 24 cards for each player, a percentage correct should be determined. If the player is able to get 80% or more correct, it may be that:

1 the situations chosen do not actually reflect the learning deficits, and

2. the player already has the skills necessary but is failing to use the skills because of a lack of motivation, practice, or problem-solving skills to allow generalization

In these cases, the social skills game may still be beneficial, however, the emphasis of the interaction should be changed depending on the assessment

Preparing the Game

The game is played on a large board as illustrated in Figure 1 The board was designed to resemble Parker Brothers' Monopoly game because most clients are familiar with it The game consists of the board, a die, four playing pieces, approximately 96 playing cards, and reinforcers The reinforcers are chosen based on a prior interview with clients to determine what prizes they would enjoy winning Prizes are rated in terms of desirability and a reinforcer menu is developed

The Cards

For each client, approximately 24 cards are developed, about four for each of the target behaviours. Each target behaviour is presented in each of the four card categories. give and take, right or wrong, fill in, and role-play There should be a minimum of 72 cards per game; however, there can be more to meet the needs of the client Game cards are changed or added as the game progresses

Give and Take Cards

This category of cards is instructional The player is not required to provide a response These cards are used to teach the group appropriate and inappropriate responses to the situation and to introduce the consequences that can be expected Based on whether the situation presented describes an appropriate or inappropriate response the player is either awarded or fined $5.00 or 5 points Note, this is the only sequence of cards that uses a response cost Although these cards do not specifically

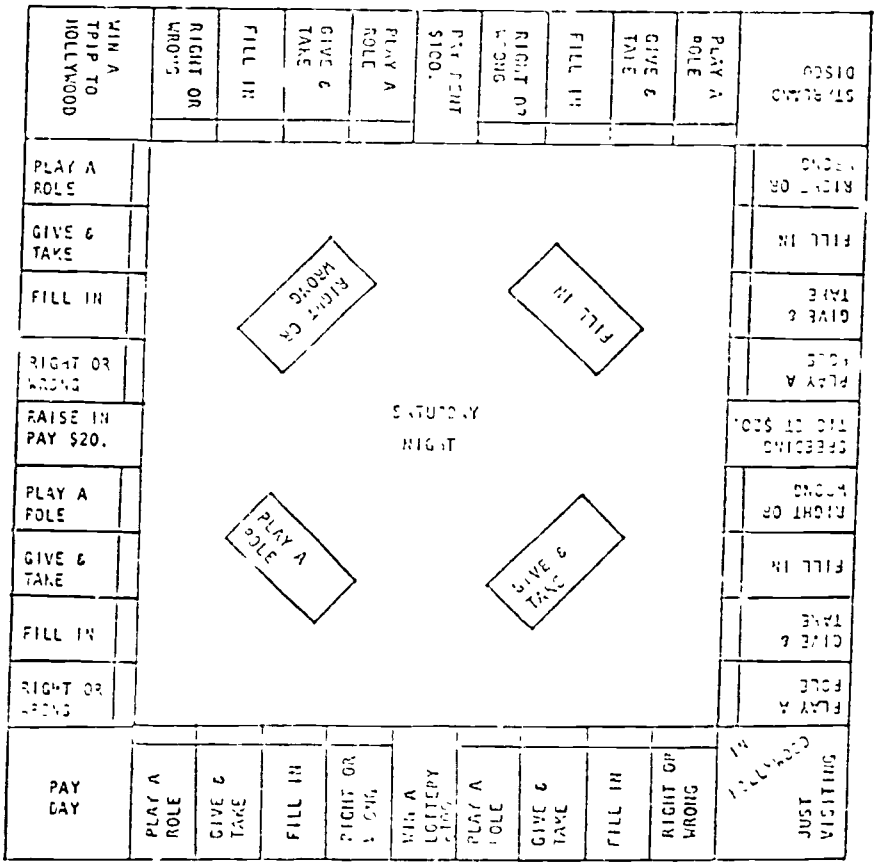

Figure 1

require a response from a player, the *reasons why the behaviour was appropriate or inappropriate and deserved the consequence are discussed.*

Give and Take Examples

Target Behaviour: Inappropriate affection situation: You just hugged someone you hardly know, lose $5.00.

Target Behaviour: Appropriate affection situation: Your girlfriend gets on the bus. Although you are happy to see her, you wait until you get home to give her a kiss Gain $5.00.

Right or Wrong

These cards contain a statement which the player must judge to be a right or wrong way of handling the situation As these cards require a response from the player, the correct response is rewarded with $10 00. These cards present either specific social situations or more general statements about social conventions After responding to the card, the player is also asked for his or her reasons for giving the answer. In this way, the mediator can assess any misconceptions the player may have as to why the situation was appropriate or not The group then decides if the response was correct, and alternatives and consequences are explored The mediator can use knowledge from the assessment to help the group explore particular areas that are problematic for the players.

Right or Wrong Examples

It is OK to kiss your girlfriend on the bus Right or wrong?
Asking my mother for a hug is OK Right or wrong?

Fill-In Cards

These cards require the player to complete the description of the situation presented by filling in the missing information. These cards not only require the individual to assess the situation, but also to generate his own alternatives, evaluate the consequences and choose the best. The reward for an appropriate response is $15 00. As in the situation of right or wrong, the individual explains why he or she chose the response presented. The group discusses the appropriateness of the response Group consensus again dictates whether the response is worthy of the reward. In this series of cards, the mediator can take advantage of the fact that there are often many possible alternatives that could have been chosen and can identify with the group the reasons (situational events, consequences, feelings of others, probability of success), why one response might be better

Fill-In Examples

Two good ways to show someone you like them are to _____.
When I am lonely, I _____

Play a Role Cards

These cards require a player to role-play a situation with another player or the instructor according to the player's choice The player is required to play act the best way of handling a social situation presented on the card As these are the most difficult cards, a correct response, as determined by group consensus, results in a $20 00 reward The group discusses why this response was a good alternative relative to its impact on

others, its social appropriateness, and the perceived consequences for the individual. Other options will also be explored based on the knowledge of the previous responses of the players to examine why some alternatives may be inappropriate. If the response is incorrect, the group will generate the best response through the problem-solving steps and then model it for the player.

Play a Role Examples

You feel lonely on a Saturday afternoon. Tell what you would do.

A guest comes to your home and is sitting next to you at dinner. Start a conversation.

The Squares

Most of the squares are color coded to correspond to the colors of the cards. By eliminating the need to read the category, the player simply needs to be able to match colors in order to pick the card. When a player lands on a square of a particular color, he is required to draw the top card of the same color. He or she can either read the card or can pass it to someone to read it for him or her. The color codes are as follows:

1 Blue - Play a Role

2 Red - Give and Take

3 Yellow - Fill-In

4 Green - Right or Wrong

In addition to the colored squares, provision is made for turns which do not require responses to social situations. These cards are included to relieve the pressure of always having to respond, to increase the fun and interest and make the interaction as game-like as possible. Therefore, this aspect can serve to motivate participation throughout the game and in subsequent sessions. These squares are intended to provide a chance to win and lose extra points, independent of social skills. These squares are as follows:

1 Payday - Plus $100.00

2 Win a Lottery - Plus $100.00

3 In Hollywood - No value

4 Speeding Ticket - Minus $20.00

5 Starland Disco - No value

6 Pay Rent - Minus $100.00

7. Win a trip to Hollywood - Move playing piece (no value)
8. Raise in Pay - Plus $20 00

Preparing the Game

The game board is placed on a table and the game cards are placed facedown in piles on the allotted spaces in the center of the board. The cards and spaces should be color coordinated. Each player's playing piece is put on "Pay Day," and each player starts with $150.00. The bank holds the remainder of the money. The players decide who will be the banker. The game begins with each player throwing the die and the player with the highest roll begins playing.

Playing Procedures

1. The player's turn begins by rolling the die, and the playing piece is moved in a clockwise direction the number of spaces showing on the die. When landing on a square, the player either draws the designated card, wins or loses money as described on the square, or "rests" on a free space. If a card has been drawn, the player must respond to it in a socially appropriate manner in order to win money.
2. The other players decide whether the answer is correct or incorrect. If the other players cannot reach consensus, the mediator will have the final say. If the player's response was judged successful, the player receives social reinforcement, the card value, and the play moves on to the next player (in a clockwise direction). If the player's response was judged unsuccessful, the group discusses the card in order to identify successful responses, and the most appropriate response is modelled The player remains on the square, does not receive the card value, and the card is kept until the player's next turn At the next turn, the player has the option of responding to the same card (the appropriate response was previously discussed and modelled, therefore, the probability of success is great) or of a drawing a new card. The allotted card value will be received for an appropriate response regardless of whether the same card or a new card was chosen. The group process provides a simulated social situation in which players can interact with their peers, receive instructions in appropriate behaviours, identify a range of potential consequences that each possible response might receive, decide on the best alternative, and practice the chosen behavior. Critical to the game is the interactional learning that occurs between the players, who provide feedback, reinforcement, correc-

tion, and modelling In addition, the peers serve as a neutral cue to use these new skills once out of the training session

3 In addition to judging the correctness of the response, the mediator engages the group in evaluating the response relative to other possible responses, the consequences and impact of each response, the potentially best choice and the evaluation of the benefit of the choice

Each card is mediated by a discussion of the problem and a simulated problem-solving session. This process not only provides the client with instruction but also the skills to make future determinations The mediator should try to involve the whole group in the discussion The mediator should not take on the role of "sole owner of the truth" but instead should build on the strengths of the group.

4 If the player lands on a space occupied by another player, then *each* player draws a card and is given the opportunity to respond. In this instance, successful responses are "paid" *double* the card value for each player

5. Each player receives $50 00 each time he passes the "Pay Day" square

6 The individual game is time limited according to the mediator's assessment of the players' needs and taking into account the players' level of motivation The game should not continue until the players are tired of it; rather, it should be ended while they are still enjoying it and are enthusiastic about it so that they will look forward to the next game day. It is suggested that the game duration be no less than 30 minutes and no more than 90 minutes

7. The game winner is the person who has collected the most game money within the allotted time

8. The game ends with the players using their winnings to "purchase" items.

9. In addition to the social reinforcement delivered during a game by the mediator, tangible reinforcers are given after the game. A reinforcement inventory is filled out by each player before the first game is played The preferred item for a given player costs $500 00 of game money, second choice costs $450 00, third choice $400 00, and so on until the eighth choice which costs $150.00. The list can include any of a variety of activities or items such as toys, movie tickets, prizes, food, make-up, video cassettes or albums, going out for lunch, and so forth Players can save money over games to earn

a top prize It is important to insure that each player earns money during the game, and each player is able to buy something

10 The number of games played depends on players' needs (i.e., making less than two errors on target cards per game for two consecutive games). However, the target is usually 80% successful responses over three consecutive weeks. It should be noted, though, that one can expand the cards, write new ones, and so forth, and continue the game as long as it is helpful and enjoyable.

11. The game should not be played any less than once per week, or more often than three times per week. If the game is played too infrequently, the players may not remember what they learned and progress will be slowed. If the game is played too frequently, like any other game, the players will tire of it.

12. The time, place, and players should be consistent from game to game until players have achieved the goals set for the game. In this way, distractions, tardiness, and confusion are minimized, and players can look forward to each game time

Recording Change

During each game, the mediator should record whether a player responds correctly or incorrectly to one of his or her own cards. This should give a percentage correct for each game The data sheet identifies which of the player's behaviours were correctly or incorrectly responded to. A weekly tally can be made to determine the percentage correct for each behaviour. When given behaviours have reached 80% for three consecutive games, the individual can be assumed to have reached criterion

Generalization

Skills learned in the game serve no real purpose unless they become part of the daily behaviour repertoire of the client Generalization involves transferring expectations from the game to the real life settings and placing the skills in a real life context Generalizing from one environment to another is difficult at best with social skills and particularly for persons with handicaps. Nevertheless, we have found generalization to occur with some clients as a natural result of the Social LIFE game Some clients need a method to transfer the skills There are three steps in the process of generalizing the skills from the game to everyday behaviours: reaching criteria, practicing skills, and reinforcing skills

Reaching Criteria

Once the client reaches the game criteria set for determining competence in a skill targeted for change, the process toward generalization begins. It can be a mistake to wait until full criteria on all behaviours is met before beginning the process as this can lead the mediator to see the generalization process as discrete blocks rather than as an interactive process. Also, it allows the mediator the opportunity to use the real life experiences in the game and to foster discussion around issues practiced in the stages of generalization

Practicing the Skill

Moving from the game to real life situations can be difficult for the client. The mediator can assist in this process through the use of many of the techniques used in the game: modelling, prompting, and providing positive and corrective feedback to the natural environment, as well as providing adaptations for clients who cannot perform the skills independently This teaching of generalization is usually the part of the program that is most often neglected or not fully carried out.

Practice can be done in several ways:

1. The mediator can create simulated practice situations in the natural environment or in situations which include components from the natural environment
2. The mediator may provide opportunities for "safe" practice where trials are accompanied by the mediator and where prompting and reinforcement are still provided by the mediator

Mediated Environments

By enlisting the support of "significant" others from the beginning of the program, some "natural" generalization will occur as they discuss with the players what the players are learning during the game In the generalization stage, you may wish to be a little more formal and request information as to how the person is handling the situations that arise in those environments as well as setting up situations for the player to practice. It is important that when approaching the "other" mediators, you do so with permission of the client It may be best to meet with the other mediator and the client to discuss practicing these skills in that environment Again, you can use these examples as a basis for reinforcement or discussion in the group

Non-Mediated Environments

Environments without mediators are perhaps the most difficult to generalize as there is no one you can enlist for help (although, in some

cases, mediators can be found by enlisting the aid of, for example, a store clerk or a restaurant waitress, but care regarding confidentiality must be taken) In these cases, the mediator may want to accompany the player to those environments and watch from afar. This may not be the most natural way of generalizing but it may be the only expedient way of getting reliable information. Again, successes and failures can be dealt witn in the group as outlined above.

Reinforcing Skills

It is important to ensure that the generalization sessions provide a high degree of reinforcement for the client for performing the skills outside the game. Initially, the clients may need a great deal of reinforcement for showing the behaviour in the simulations or in real life. This is particularly true if they have had a long history of failure. The form of reinforcement used is generally social, in the form of specific, descriptive feedback. However, an occasional activity reinforcer for a session well done is also very rewarding. This system of reinforcement should continue both during and after the generalization process. We all receive regular reinforcement for our social skills, and we should ensure that the clients receive that reinforcement at a natural rate. The mediator at this stage will be pulling back as the client becomes more and more confident, and the reinforcement slack must be picked up elsewhere. At this point, the mediator may need to teach the clients how to recognize the natural reinforcers

Conclusion

The generalization process must be watched with great care as this transition of skills can be more difficult than the actual teaching. By enlisting the aid of other mediators, by ensuring the opportunity for real life practice, and by providing feedback on the performance, you will be more likely to succeed Make sure the client feels comfortable with the generalization pace and ensure that you are not setting the client up for failure by beginning the process too soon

Language and Communication Applications for Microcomputers

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Abstract

Specialized software and computer peripherals are available to develop language and communication skills in students with multiple handicaps. This paper summarizes hardware considerations, available software, and applications for vocabulary, language concept, and communication enhancement.

Introduction

Increasingly, microcomputers are being used in programs for individuals with severe and multiple handicaps Many software programs are available, the stated purposes of which are to develop cause/effect relationships, concepts, preacademic, and academic skills With some ingenuity and adaptation, many of these programs can be used to develop language and communication skills in individuals with language delays or disorders. In addition, much software has been developed for persons with communication handicaps

The applications discussed in this paper are for the Apple II series computers (Apple II+, IIc. IIe, IIgs) Distributors for cited hardware and software are listed in the Appendix

Computer Hardware: Special Considerations

In addition to a basic computer system, the following should be considered when selecting hardware for use with language delayed/disordered individuals

1 One floppy disk drive is a requirement. Two disk drives allow the teacher/clinician easily to create and copy disks Much of the software for this population is available on 5 1/4" disks.

2. A color or RGB monitor is desirable as virtually all games and developmental software are in color

3. Special computer peripherals or software may be useful for enlarging the monitor display for visually impaired clients
4. Printers allow for a permanent record.
5. Speech synthesizers allow for spoken feedback to the user or for spoken output for listeners
6. Input methods other than a standard keyboard allow for input options for individuals with cognitive, motorie, or developmental limitations Mechanical adaptations (e.g , keyguards, keylatches, and touch screens), concept keyboards (e.g , Power Pad and Muppet Learning Keys), alternate keyboards (e.g., Unicorn Expanded Keyboard and Mini Keyboard with appropriate computer interfaces), scanning displays on the computer monitor (e g., Adaptive Firmware Card), coded entry (e.g., Morse Code), and gameport input devices (e g., joysticks, paddles and mouse, switches) are available as options to standard keyboard input.

Ensure that all hardware components and computer peripherals are *compatible* with the software used. For example, the Echo series speech synthesizers are often used with software developed for individuals with language delays or disorders.

Software

In the discussion that follows, three major areas of software are reviewed: speech and language software accessed through scanning, speech and language software accessed through direct input, and generic software (e.g., software not specifically designed for the purpose of teaching language goals but having applications in this area)

Scanning Software

Laureate Learning Systems produces a large amount of software for language delayed/disordered individuals and other special needs populations. Much of this software concerns language-related topics, such as, teaching receptive noun and verb vocabulary, and grammatical skill development. A scanning option is available which allows an individual to choose between two or three options displayed on the monitor The Echo series speech synthesizers permit these programs to "speak" Three examples of scanning programs demonstrated during the presentation of this paper were· first words, first verbs, and MicroLads

Direct Input Software

Many direct input programs developed for speech and language programming have communication board applications They can be

used as training devices for eventual use of a communication board or as transitional communication boards.

EALS (Early Acquisition of Language Skills) allows the Apple computer, an Echo speech synthesizer, and the Power Pad to work together as a beginning electronic communication aid. The Power Pad can be programmed for two to four selections. When the user activates the Power Pad by pressing one of the areas, the picture associated with the area will be displayed on the screen as the corresponding word spoken.

PEAL (Programs for Early Acquisition of Language) allows the Apple computer, an Echo speech synthesizer, and the Muppet Learning Keys to work together as a beginning electronic communication device which can be used to request and/or comment on objects and actions Overlays provided for the Exploratory Play and Representational Play programs are placed on the Muppet Learning Keys. When a specific area of the keyboard is pressed, the speech synthesizer "speaks" the associated word/phrase and the corresponding picture appears on the computer screen. Exploratory Play is for children functioning at the 18 to 24 month level, while Representational Play is for children functioning at the 24 month to five year level. These programs are effective for children who are at risk of not beginning to use language at a developmentally appropriate age or for children who have delayed language skills.

Talking Word Board allows for the use of the Unicorn Expanded Keyboard as a nonportable talking communication board when used with an Echo speech synthesizer. The software can be programmed to "speak" a message when the child touches a square on the Unicorn Expanded Keyboard. Programming requirements are minimal.

Power Pad software, such as, Peek 'n Speak, Morning Song, and Wheels on the Bus are available for use with Echo speech synthesizers. Peek 'n Speak can be used as a beginning communication board. The teacher/clinician creates individual vocabulary and overlays. Morning Song and Wheels on the Bus can be used to accompany the type of singing typically done in preschool classrooms. The user can choose the verse he or she wants to sing by pressing an area on the Power Pad. The speech synthesizer "sings" along.

Generic Software

Within the category of direct input software, there are numerous programs not intended for the language-impaired population that can be effectively used with this population. These programs are frequently used by imaginative teachers and clinicians to provide instruction or drill and practice of communication skills One bonus in utilizing generic software is that it is significantly less expensive than software designed for individuals with communication handicaps. Stickybear Op-

posites and Stickybear ABC were demonstrated during presentation of this paper.

Language and Communication Applications

Creative use of computer hardware and software is required to best meet the needs of language delayed or disordered individuals. However, when looking at computer applications, it is important to keep the following points in mind.

1. The computer is only one tool that can be used to foster language and communication development. Interactive methods of language therapy should remain as a focus, with computer programs used only as a supplement where appropriate.
2. The computer should not be seen as an end in and of itself A student should not use the computer unless it has been well established that this type of programming is functional for him or her.
3. The computer can be used to simulate various augmentative communication aids, but is often not the aid of choice due to portability and mounting considerations

No one piece of software has only one application. For ease of presentation, applications were discussed in the area of vocabulary development, language concept formation, and communication Several video examples of language delayed/disordered individuals using computer systems were presented. The creative use of hardware and software applications to meet motoric, sensory, cognitive, and language needs was emphasized.

Vocabulary Development

Vocabulary, in this context, refer to basic word categories such as nouns and verbs For many individuals, this may include teaching symbol-based representation of vocabulary in pictographic, ideographic, and orthographic forms

Many of the available programs teach receptive vocabulary, although a creative clinician can also use them to foster expressive vocabulary development.

Language Concept Development

Language concepts, for the purpose of this paper, refer to language content areas such as spatial relations, negation, and colors. Application of software referred to as *generic software* in this paper falls into this category. For example, Stickybear Opposites has several exemplars of spatial relations (e g , above/below, in front/behind, over/under) in addition to other opposite pairs (e g , fast/slow).

Communication

Communication refers to all aspects of oral and written language. Many programs can be used as therapeutic tools to foster language development and language use, to train in the use of a communication aid, or as an academic tool to allow the user access to computer-based communication in the more traditional sense of word processing and computer assisted instruction.

The best computer based communication programs allow expression across modalities That is, the computer allows for auditory expression through synthesized speech and visual expression through the computer monitor and printed output.

Summary

Creative use of computer hardware, peripherals, and software may assist in developing language and communication skills in language delayed/disordered individuals The computer should be viewed only as a tool to develop language skills, with interactive aspects of language use being the ultimate goal

Appendix

Cited equipment is available from:

Activating Children Through Technology (ACTT), 27 Horrabin Hall, Western Illinois University, Macomb, Illinois 61455 (Peek 'n Speak)

Adaptive Peripherals, 4529 Bagley Ave. N., Seattle, Washington 98103 (Adaptive Firmware Card, Talking Word Board)

Cacti Computer Services, 130-9th St S W , Portage La Prairie, Manitoba R1N 2N4 (Unicorn Expanded Keyboard, Adaptive Firmware Card)

Dunamis, 2856 Buford Hwy , Duluth, Georgia 30136 (Power Pad)

Laureate Learning Systems, Inc., 110 E Spring Street, Winooski, Vermont 05404 (First Words, First Verbs, MicroLads)

PEAL Software, 3200 Wilshire Blvd., Ste. 1207, South Tower, Los Angeles, California 90010 (Representational Play, Exploratory Play)

R J. Cooper and Associates Computer Resources for the Handicapped, 2144 S. 1100 E., Ste 150, Salt Lake City, Utah 84106 (EALS)

Street Electronics Corp., 1140 Mark Ave , Carpinteria, California 93013 (Echo speech synthesizers)

Sunburst Communications Inc , P O Box 3240, Station F1, Scarborough, Ontario M1W 9Z9 (Muppet Learning Keys)

TASH, Inc , 70 Gibson Dr , Unit 1, Markham, Ontario L3R 2Z3 (Unicorn Expanded Keyboard, keyguards, keylatches, Mini Keyboard, Adaptive Firmware Card, Talking Word Board)

UCLA/LAUSD Microcomputer Software, 1000 Veterans Ave., Rm 23-10, Los Angeles, California 90024 (Wheels on the Bus, Morning Song)

Unicorn Engineering Co., 6201 Harwood Ave , Oakland, California 94618 (Unicorn Expanded Keyboard)

Xerox Education Publications/Weekly Reader, Computer Software Division, 245 Long Hill Road, Middletown, Connecticut 06457 (Stickybear ABC, Stickybear Opposites).

The Children's Project: A Residential Option for Children with Developmental Disabilities

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Abstract

The purpose of the Children's Project in Oregon was to provide services to five children with developmental disabilities whose families were experiencing stress. Each of the children, aged five to 12 years of age, had at least three disabilities and were placed outside their family homes for various reasons. The project staff included each child's case manager, a home provider, a parent trainer, the child's natural parents and an administrator. Results of the project indicated that the children acquired self-help skills. Benefits and limitations of the project are discussed.

Background

What prompts a family to request out-of-home placement for a child with disabilities? Studies indicate that increased levels of family stress may be a factor (Blacher, 1984; Crnic, Friedrich, & Greenberg, 1983; Gallagher, Beckman, & Cross, 1983)

Factors contributing to placements are of two types, those related to the child and those related to the family Some factors related to the child are the child's age (more requests are made for older children), number of diagnostic disabilities, and behavior problems. Family factors contributing to placement include disruption of family relations, family mental health and/or health problems, and lack of social support and services for families and the child (Seltzer and Krauss, 1984; Tausig, 1985).

Research indicates a need for increasing the family's coping ability in order to lessen the stress of caring for a child with disabilities and suggests doing this by increasing support to the family The greater support the family has, the better it is able to cope with the stress of raising a child with handicaps (Crnic, Greenberg, Ragozin, Robinson, & Basham, 1983; Crnic et al., 1983; Friedrich, Wilturner, & Cohen, 1985; Geis. & Baer, 1980; German & Maisto, 1982; Intagliata & Doyle, 1984).

In Oregon, out-of-home placement is one of the few options available to families experiencing stress who have children with developmental disabilities.

According to the Oregon State Children's Services Division, 352 children with suspected or verified handicapping conditions are in out-of-home placements in Oregon Eighty-eight percent were under the age

of 13 at the time of placement. Eighty-three children have been placed in the state institution over the past three years.

Minimal state funding is available in Oregon to assist families with children three years of age or older who have developmental disabilities. Unless parents request continuation, mandatory case management services end when a child enters school until age 15.

The purpose of the Children's Project was to provide a residential option in the community for children with disabilities to foster the ties between the family and child. Parents who placed their child did so with the intention of maintaining the child in the project until the problems which prompted placement were remediated. Alternatively, some parents placed their child with no intention of having the child reenter the family home.

Participants

The Children's Project served children five to 12 years of age who had developmental disabilities. Two of the children in the project were living out of their parents' homes in an institution when the project began. Three of the children were placed in the project by their families.

Children in the project were placed outside their family homes for many of the same reasons indicated by other research (Seltzer & Kraus, 1984; Tausig, 1985). For example, in two cases, behavior problems were cited as the reason the children were placed. In a third instance, the family had more than one child with developmental disabilities for whom to care. In the fourth case, the parents' physical disabilities did not permit them to care for their child. In the fifth case, the child referred to the project had extreme care needs and the nature of the child's disabilities prompted placement. Four of the families were raising two or more other children ages 12 or under.

Table 1 depicts factors cited as contributing to out-of-home placement of children and the percentage found to be related to project participants.

Children in the project ranged from being moderately disabled to profoundly disabled and had a wide range of disabilities. All children had three or more disabilities.

Table 2 displays seven disability characteristics and the percentage found in children participating in the project.

Methods

The Children's Project started in May 1986 as a means of assisting families under stress and their children.

The project differed from other children's residential programs in that the parents rather than the courts initiated placement of the child

Table 1
Factors Found in the Literature to Contribute to Out-of-Home Placement and Relationship to Children Placed in Children's Project

Factors contributing to placement	Percent children/families in project
1. Number of diagnostic disabilities	100% of children had 3 or more disabilities
2. Behavior problems	80% of children had behavior problems
3. Health problems	20% of families had parents with health problems
4. Other children with disabilities	20% of families had another child with disabilities

Table 2
Seven Diagnostic Disability Characteristics and Percentages of Occurrence in Project Participants

Types of Disability	Level of Disability					
Disability	**Profound**	**Severe**	**Moderate**	**Mild**	**Suspected**	**% Occurring in participants**
Autism			1	2		60%
Communication	3		1	1		100%
Mobility		2		2		80%
Visual		1				20%
Auditory				1		20%
Mental Retardation	2		2		1	80%
Behavior			3	1		80%

and retained all legal rights for the child They maintained close contact with the child throughout the placement

Children were placed with families in the county where their parents resided. Project homes were selected jointly by the local mental health authority and project staff. Homes had to meet a combination of Oregon licensing requirements for adult foster homes and small intensive training homes. Parents interviewed prospective home providers to determine which family would best accommodate the needs of their child

Project staff included each child's case manager, a home provider, a parent trainer, and the child's natural parents, as well as an administrator for the project.

The home provider's role was to provide direct care for each child as well as teaching practical living skills. The parent trainer's role was to train the home provider in teaching techniques, to design formal skills programs to use in teaching each child, and to monitored the teaching. The case manager monitored each child's general care to assure that State standards were being met through the project. The parents assisted in the design of their child's habilitation plan and were required to provide respite for home providers on at least a once-per-month basis. In most cases, parents had their children home on a much more frequent basis.

Parents continued involvement with their children to the degree to which they felt able For example, some parents retained all responsibility for the child's medical care, clothing, and finances. Two children spent most weekends at home and lived with the providers' families during weekdays

Supplemental Security Income provided the room and board payment for the child's out-of-home care at a rate of $299 70 per month per child. The State of Oregon contributed a service payment to the provider to pay for each child's training and other services the provider performed for the child The service payment was about $400.00 per month.

The child's parent, home provider, the parent trainer, and local case manager designed an habilitation plan for each child which specified whether the parent or home provider would be responsible for the clothing, medical, and other needs of the child Skills the child needed to learn were prioritized at this time and some skills were selected for training.

Home providers spent an average of four hours per week teaching the child practical living skills with systematic techniques and documented the results of the teaching The parent trainer worked with the home provider on a once-per-week basis

Parent training services were also offered to the children's parents. Parents were not required to accept services but had this option available to them if and when they desired it. The parent trainer coordinated teaching programs between both homes when requested by natural parents and with the school the child attended, to provide continuity of programming for each child The trainer was available to assist home providers, parents, and school personnel with behavior management issues as these arose.

Home providers were taught and encouraged to assist children to develop skills, not only through formal teaching, but also by using natural situations occurring within the environment, called informal training. Informal methods consisted of giving each child the assistance necessary to help him or her complete the task in which he or she was engaging rather than doing the task for the child. Unlike formal teaching, no written systematic methods were used and data was not recorded on an ongoing basis Skills were assessed by the parent trainer once per year. Home providers documented new skills as they were acquired.

Behavior management techniques endorsed by the project consisted of setting firm guidelines for each child, teaching new positive behaviors to replace negative behaviors, and providing positive reinforcement for desirable behaviors

Other therapy needs of the children such as speech, occupational and physical therapies, as well as counseling and special equipment were provided through local vendors and paid for by the project. If desired, families could receive counseling services paid for by the project

Home providers and parents were offered ongoing training and education through the project, including workshops on topics such as epilepsy, behavior management, stress management, and others.

Results

In the Children's Project, all children acquired skill in self-help areas such as bathing, dressing, and toileting, as well as in communication, recreation and leisure, and household responsibilities Table 3 depicts the results of some formal skills programs during the first eight months of the project

Children learned a number of skills through the informal teaching given by the home providers Table 4 displays some of the skills learned by children through informal methods

With the exception of one home provider, childrens' behavior problems did not transfer to the providers' homes The problems were initially managed effectively by most providers and did not become unmanageable All children continued behavior problems to some degree in their family homes during home visits

Table 3
Some Skills Acquired Through Formal Data-Based Training
During First Eight Months of Project

Data-Based Formal Training			
Skill	% Baseline	% Last review	Months with training
Bathing self	0% independent	68% independent	7
Washing hair	0% independent	75% independent	7
Dressing self	12% independent	80% independent	5
Responds to verbal cues— toileting and washing hands	6% independent	61% independent	8
Table manners	41% independent	75% independent	4

Table 4
Some Skills Acquired by Project Participants Through Informal
Training During First Eight Months of Project

1. Dresses self
2. Puts clothes in hamper
3. Eats at dining room table with family
4. Plays with nonhandicapped peers
5. Rides 3-wheel bike
6. Signs "eat"/"drink" for food
7. Eats independently with fork and spoon
8. Holds toys
9. Waves "hi"/"bye"
10. Responds to signs "finished," "stand-up," "come," and "wait"
11. Hangs up own coat
12. Puts toys away
13. Crawls rather than swims for general mobility
14. Takes steps independently when supported by others

To date, only one set of parents has consistently requested help from the parent trainer for behavior management issues. They had received help throughout most of the project. The parents in this case had learned to successfully manage their child's behavior problems in several settings. For example, they had learned to eliminate tantrums which occurred during shopping at the local grocery store, in the bathtub, and during car rides. They did this by clearly defining what behaviors were appropriate for the child to engage in, teaching their child these behaviors, and reinforcing the child for performing acceptable behaviours.

Discussion

The Children's Project has improved the quality of life for five children who had developmental disabilities and their families. Benefits to children and their families are described below.

For two of the children living in the institution, the project provided them with a means to reenter the community and reside in a family environment. For one of these children, the project appears to have strengthened ties between the child and the natural family. The family visited the child on a more regular basis and participated in most decision-making related to the child including training and school programs as well as such items as hairstyle, clothing, and choice of medical personnel.

Natural parents received relief from providing 24-hour care for a child who was difficult to manage in the home. Yet the natural parent retained all rights to the child and participated in most decision-making. Parents could have as much contact with their child as they desired.

The children in the project were provided with consistent teaching to develop practical living skills. All children had made progress in caring for themselves. The project was designed to provide continuity of programming between home and school environments when this was needed and/or requested.

For the children with behavior problems whose relationship with parents were disturbed because of these problems, the relationships became more positive. Parents who were unable to speak positively about their child when the child was placed, within a few months of placement, begin to appreciate the child again. This may have been due to a number of factors. First, the parent had an opportunity to witness another family and project personnel enjoy the child despite his or her limitations. Second, the parent was relieved from the stress of direct care for the child and managing the child's behaviors Third, the child's behaviors and skills improved, changing the way in which the parent perceived the child and altered the relationship between them.

Despite the benefits of the project there were negative factors as well. The project was designed to maximize and maintain the relationship between parents and the child Nevertheless, removing a child from his or her family home was a painful experience for both parties. The parents were able to understand the separation; the children could not. Both experienced depression and other signs of stress after placement.

Another criticism of the project came from a parent. The lack of services to families in Oregon made this project necessary. If families had been provided the same level of service and support that was available to project providers, removing the children from their homes might not have been necessary Because of this, children who enter the project in the future will be served in their family homes with the goal of preventing out-of-home placement. Parents currently in the project who eventually move their children home will receive services from the project through a transition period to assure the success of the child's reentry.

The difficulty in recruiting and maintaining quality home providers for the children was another criticism of the project. The most successful placements occured when parents were solidly committed to maintaining the provider's home for their child and when the provider was dedicated to the welfare of the child thus committed to maintaining a harmonious and uncritical working relationship with the parent

Good communication between the parents and home providers, and the intent to work cooperatively together were essential if a child was to have a stable placement. This meant that the home provider must be supportive and uncritical of the parent which was not always easy to do when the home provider was able to teach the child and control his behaviors when the parents could not

Although parents wanted the best for their child, they often felt inadequate when faced with a home provider who could work effectively with their child. Parents experienced guilt for placing their child with another family and received criticism from members of extended families, from friends, and from acquaintances Parents who were considering out-of-home placement needed to be counseled as to the feelings and situations they might experience

Home providers sometimes felt a lack of control over the child because decision-making involved a team of people, with the parent ultimately having the most control over the child's care and training. Parents were also able to remove the child from the home and project at any time which is threatening to home providers

Due to the degree of parental involvement, home providers sometimes felt less responsible for the child than did other providers such as foster parents and group home providers Children may have been considered more *boarders* than actual members of the home provider's

family Also, the home providers sometimes expected more from the natural family such as caring for the child during holidays and provider's family vacation and expected to provide less service to the child.

Thus, the project had negative as well as positive features It was predicted that at least two of the five children in the project would return to their families. Two of the three remaining children would most likely continue living in residential settings different from that of their families. For all children, involvement with their natural families would most likely continue

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A New Life-Style for Persons with Severe Disabilities: Supported Independence

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Abstract

This article presents the first descriptive data on an innovative approach to persons with disabilities so complex and serious that the traditional services have given up. The model, supported independence using individualized dollars (dollars allocated to the specific client), emerged when the Calgary Association for Independent Living, a small self-help group of disabled persons, was asked to help a multiply disabled, aggressive, young man to stay in the community. Because the Board had made a commitment to serve all disabled persons and had stated their priority as preventing unwanted institutionalization, they agreed. This is the first of five published accounts about the first severely disabled persons who, with their families, friends, and CAIL, are true Canadian pioneers of supported independence.

With the goal of maintaining a young man with severe disabilities in supported independence, the Calgary Association for Independent Living (CAIL) "broker" raised private funds and used summer staff and her own apartment to buy time while CAIL put together a funding mechanism and a clinical advisory team to compliment their self-help base. These supports offered "Larry" a last chance. His "last chance" opened the door to many others. To date 27 persons requiring exceptional funding have received support from the CAIL supported independence model, and another 120 have received support in using their disability allowance benefits more effectively. This is the first of five published accounts about the first severely disabled persons who, with their families, friends, and CAIL, are true Canadian pioneers of supported independence.

This independent living approach stresses consumer control and choice. This differs dramatically from service models that allow control only when the individual demonstrates competence. In independent living, the individual, no matter how disabled, is assumed to know best his or her own disability and his or her own needs. Control is assumed, and once accepted, competence manifests. The social environment is adapted to support the person, not the person to the environment. The

disability is accepted and seen as secondary Independent living assumes that desire to change precedes change, and the desire must come from within the person

A customized plan and specialized funding are facilitated by a service broker, acting on behalf of the individual. The key to the model lies in the partnership between the person with the disability and the personal support staff who works for him or her (MacLean, H , Marlett, N., & Goldenberg, S., personal communication, May, 1987). This is a dramatic shift from the traditional balance of power between the professional and the client. It frees the skilled staff to enter into a creative, dynamic, if at times, taxing relationship.

This paper focuses on the changes in behavior, the need for supervision, personal decision-making, and funding patterns over a two-year period.

All five persons in the study were considered to be moderately to severely mentally handicapped, behaviorally aggressive, and had been diagnosed as exhibiting psychotic behaviors. In addition, three had experienced severe brain damage. The behaviors which led to their expulsion from programs included: destruction of property, aggression toward staff, regression, and high risk social behavior. CAIL was seen as the only alternative to institutionalization.

Funding requests were prepared and approved (MacLean, 1987) and individual situations were created with the assistance of natural support networks known as Joshua Committees (Hicks, 1987).

Accommodation and Personal Support

The following scale was created to describe the range of available alternatives (levels) for accommodation and personal support (Marlett, 1974):

5 isolated; no intervention possible; removal of most human contact;

4. restrictive 24 hour program; 1:1 staff in highly structured program; restrictive procedures used prn (i e., as needed); designated facility for behavior problems;

3. structured program with obvious contingencies; staff trained in behavior modification; restrictive procedures part of program; group home or natural environment;

2. consistency in structure but structure natural and developed with the person; systems in place for behavioral emergencies; in natural environment (i e., own home or apartment);

Table 1
Changes in Accommodation and Personal Support During Two Year Experience in Supported Independent Living Situation

Client	Status at referral	Level	Status at 3 months	Level	Current status	Level
1	24 hour supervision for Behavior (2 staff) Terminated from institution	4	in own apartment full time, p s s.*	2	sharing home with 2 room mates (peer and p s s)	2
2	isolated at home, no intervention/no contact	5	in own home full time, support from skilled clinician	3	sharing home with peer room mate and p s.s	2
3	24 hour level of supervision in group home; 1-1 worker	4	living with family with p.s.s	3	family situation	1
4	unit in Provincial maximum security institution	4	trained staff in home; 24 hour supervision	3	living with peer and p s s	2
5	isolated in duplex, no contact	5	apartment with p s.s.	2	apartment with room mate/staff	1
$\bar{X}$		4 4		2 6		1 6
(n=5)			*p s s personal support staff			

1 sporadic support for guidance or refocusing as needed within a consistent supportive base; in natural environment (i e , own home or apartment);

0 personal support only when requested

Table 1 describes the situations at the time of referral to CAIL, the situation three months later, and the current status All persons were in restrictive settings (levels 4 or 5) at the time of referral Within three months, the pattern of support shifted to 2 and 3 Currently, the situations can be described as levels 1 or 2 Little further movement is expected for those with serious brain damage because of the severity of their perceptual, motor, or memory limitations The changes in mean level of support, although only nominal data, suggest a profound change

Table 2
Presenting Behaviors and Current Status after Two Years*
of Supported Independence

Client		Present	Present reduced	Absent	Last Occurred
1	- Physical aggression to staff and trainees			✓	July/85
	- Severe agitation—pacing			✓	March/86
	- Disturbed sleep patterns			✓	Sept/86
	- Suicidal		✓ (Minor recurrence April 87 during physical collapse		
	- Incontinence			✓	March/86
	- Total motor collapse		✓		
	- Echolalic			✓	
2	- Severe aggression—not prompted—to staff			✓	Nov/86
	- Severe aggression when others in personal space			✓	Jan/87
	- Self stimulation		✓		
	- Echolalic			✓	
	- Severe sleep disruption (nocturnal seizures)		✓		
3	- Verbal aggression—hitting out			✓	
	- Destruction of property			✓	
	- Psychotic outbursts			✓	
4	- High risk sexual behavior		✓		
	- Verbally abusive		✓		
	- Physically aggressive to staff			✓	
5	- Abusive language			✓	
	- Psychotic approaches			✓	
	- Frightening behavior			✓	
	- Inappropriate conversation			✓	
		0 0%	6 28%	16 72%	

*Descriptors taken from files

in the quality of life for these five individuals (X [referral]: 4.4; X [current]: 1.6)

Presenting Behaviors

There was some difficulty in describing presenting behaviors of the clients because the graphs of behavior generated during the initial phases became irrelevant as the situations stabilized. That is, the initial presenting behaviors disappeared. Agency documents, school reports, government documents, and physicians reports were analyzed to identify major presenting problems. Only descriptors that were present in more than two documents were included. These descriptors were compiled in a chart and were rated by persons familiar with the client at this time. Descriptors were rated as *present, present but in a significantly reduced state,* or *absent.* The date of the last occurrence was also noted.

Table 2 presents the information obtained. None of the descriptors were still present, 28% were present but in a significantly reduced state, and 72% were absent. Most behaviors that disappeared did so within the first three months. This leads one to speculate that some of the more dramatic behaviors were the direct result of, and maintained by, environmental frustration

Personal Decision-Making

The following rating scale allowed for rating levels of personal decision-making:

4. no decisions made; not a party to even minor daily decisions;
3 expresses dislikes and wishes; attempts made to include the person in decisions;
2. involved in decision process; makes concrete decisions within limited choices;
1 directly makes daily decisions; involved in decision process for major decisions, direct staff; and
0. functional decision-making with alternatives; makes major decisions; monitors process; supervises staff.

Table 3 indicates rated changes in personal decision-making over the two years of the project It also includes the initial intervention strategy used to support and reinforce control. All individuals were at the most restrictive level of decision-making at the time of referral with no input in minor, day-to-day decisions. Despite this, all were involved in hiring their own staff. In one situation, the person interviewed over 20 poten-

Table 3
Initial Intervention Strategy, Personal Decision-Making, and Rated Changes over the Two Year Period

Client	Initial Level	Initial Intervention	Current Situation	Current Level
1	4	All behavioral controls and medications removed under supervision, escalation of behavior in first 3 months, language developed in first 6 months, involvement of neurologist	Makes major and routine decisions with support, e g , fired support staff and Joshua Committee; chose room mate	1
2	4	Skilled clinician established routines and reinforced personal control, 6-8 month process, alternate staffing model then introduced	Makes routine decisions with support, Joshua Committee no longer functioning, limitations due to "group home" staff model	2
3	4	Placed in home setting of skilled staff, Joshua Committee instrumental in reinforcing personal control, acceptance, subtle structure and community exposure the focus, Joshua Committee provided clinical support	Much more in control, considering a move to live with sibling, within situation expresses likes and dislikes	2
4	1	Moved into home with 24 hour supervision because of high risk behavior, progress made in own home then move to group situation broke down, move to II situation with skilled but untrained staff and room mate with similar problems, initial involvement of full psychiatric team—withdrawn after first failure	Natural controls in shared accommodation, included in day to-day decisions, transfer to internal control just starting, involved in independent day alternative, therapeutic intervention starting	2
5	4	Person spent 2 months choosing staff who could support emotional and behavioral needs as well as lifestyle, emphasis on companionship and doing things together, strong psychiatric support during process	Making decision to live independently with staff as neighbor, controls all daily and most major decisions, psychiatric support continues, dramatic decrease in medications	1

Table 4
Initial and Current Contract Costs for Supported Independent Living

Client	FIRST CONTRACT - 1985		CURRENT CONTRACT - 1987	
	Support Staff per Month	Living Costs per Month	Support Staff per Month	Living Costs per Month
1	$1,936	$675	$900	$541
2	3,126	682	2,190	678
3	1,820	682	831	680
4	3,958	681	1,320	689
5	1,156	693	1,000	689
Mean	2,459	683	1,249	653

Table 5
Yearly Estimates of Per Day Costs in Institutional/Community Group Home and Supported Independence

	Staff Costs	Facility/Administration Costs	Total
Institutional costs (estimated for those in project)	$52,000.00	$8,000.00	$60,000.00
Group home costs of persons	19,500.00	1,360 Facility 4,300.00 Administration (5,110.00 paid by client)	33,356.00
Costs of supported independence (initial)	29,508.00	8,196.00	37,701.00
Current costs of supported independence	14,988.00	7,836.00	22,824.00

tial staff before the "right one" was hired. Three of the initially hired personal support staff are still in the situation two years later, one staff model changed, and one (the only one with a clinical team directing the situation) experienced two major changes before a supported independence (SI) model was tried. This SI situation is still in place after one year.

The changes in language competence have also been dramatic. Three of the clients were considered incapable of intentional communication because of echolalic speech (those with brain damage). Their language has become both goal directed and functional. Persons whose language was confused or delusional also made dramatic changes toward coherent, intentional speech.

Funding Patterns

Perhaps the most stringent indicator of progress in this model is the direct reduction in funding made possible by the changes within the living situation. It must be stressed that the underlying etiology has not been erased; the situation has been modified to support the person in acting independently and growing.

Table 4 presents the initial contract costs and the current contract costs. The differences in these figures are dramatic when one considers the severity of the presenting problems. Table 5 compares cost estimates for several living alternatives.

The marked differences in costs between the traditional system and SI exist because CAIL makes extensive use of community resources and natural supports. The provision of safety nets and information supports that are provided by the Centre for Independent Living have not been included in the costs. Overhead charges of agencies are eliminated because the money available goes directly into services, not into administration.

If this model develops further there will need to be core funding for the safety nets provided by Independent Living Centres. At present, there is no core funding allocated for core functions—information services, peer support, or brokerage in provincial or federal policies. This employment infrastructure will be essential as the numbers served in the community through individualized dollars increase.

Summary

These situations were high risk, and yet the model used was one compatible with independent living. Persons lived in ordinary apartments, with staff they had hired themselves, supported by volunteers and natural supports with a voluntary advisory team as backup. Such a stand was possible only because of the commitment of the Board of CAIL. Each one was personally aware of the risks he or she had faced

living in the community with a disability. Their willingness to risk gave others a chance to prove that disabled persons could succeed.

There was a unique combination of ingredients operating at the time of the implementation of the CAIL model, thus allowing for success of the model:

1. existence of a consumer controlled Independent Living Centre with a staff trained in consumer controlled service;
2. commitment of the family, personal support staff, and friends of the persons who provided ongoing support and group ad ·ocacy with funders and service providers;
3. local social services management willing to adapt policy to allow persons with behavioral and intellectual disabilities to use an income security funding route to provide ongoing support;
4. a brokerage advisory team of rehabilitation and community development professionals committed to the principles of independent living who volunteered their time to support Centre staff in developing the model; and
5. the existence of guardianship legislation which appoints a legal substitute decision-maker for those unable to speak on their own behalf.

Some cautions must be stated regarding the model There has arisen an optimism and a simplistic belief in the power of individualized dollars to remedy the current crises caused by the breakdown of institutionalized services and the growing shortage of resources Money is ·nly a tool for changing environments and developing community and personal resources. Without a coherent philosophy of consumer empowerment and inclusion of natural and community resources, individualized dollars can be a costly, oppressive, and isolating alternative. One service estimated $90,000 to serve an individual in the community, in an Independent Living model and this would have meant contact with only paid staff in a single dwelling house.

This model cannot be undertaken without safety nets and a strong support base. At the very least, there is a need for core funding to support emerging employment infrastructure which individualized dollars are predicated.

In any new model, there is a lack of natural history that can be used as reference or refuge One of the authors was a participant observer and member of the clinical advisory team directing the broker in all of the initial situations This afforded a unique opportunity to provide feedback and suggest changes as the situations evolved.

While this model may not be easily replicable, it is vital that we attend to the implications it raises: an affirmation of the strength and untapped competence of persons with the most serious disabilities; a challenge to those creating behavioral problems through frustrating environmental restraints; affirmation of the effectiveness of environmental supports as an alternative to behavioral intervention; the potential to allocate money directly to persons with disabilities; and the effectiveness of consumer controlled services.

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Ecological Inventories and Curriculum Development for Special Education in Developing Countries[1]

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Abstract

This paper describes a number of common problems associated with special education curricula used in Developing Countries. Some of the problems discussed are (a) an emphasis on rote recall rather than comprehension and application of knowledge; (b) a focus on academic rather than functional skill training; (c) the teaching of generic, readiness, and preacademic skills rather than direct instruction of skills in the form in which they are or will be required in common daily tasks. A number of recommendations for curricular revision are reviewed. Some of the recommendations discussed include (a) the development of basic needs curricula founded on an analysis of the social, cultural, economic, and geographic characteristics of the students' environments; (b) the development of curricula based on the analysis of both current and future needs in the students' environments; and (c) the integration of academic and practical skill training. The paper also discusses the step-by-step procedures for using ecological inventories to develop curricula that incorporate these recommendations. These curricula are ecologically valid for contemporary and future urban and rural environments in various developing countries.

In many countries, special education curricula are merely simplified versions of the regular education curricula and share many of the same problems. Some of these problems are described below

1 Often both regular and special education curricula in many Developing Countries place too great an emphasis on rote recall rather than comprehension and application of knowledge (Duminy, 1973; Mbilinyi, 1977; Rao, 1983)

2 Often too, there is a separation of school and community As a result, curricula tend to focus on academic rather than functional skill training. The skills taught in the academic curriculum are frequently unrelated to the students' common daily task demands These curricula do not relate to the students' social, cultural, and economic environments (Duminy, 1973; Hawes, 1979; Mbilinyi, 1977) This problem is particularly prevalent in rural environments where curricula are often primarily urban in their orientation

(Hawes, 1979; Hawkins, 1980; Mukherjee & Singh, 1983). Skills are taught that are not required in the students' environments whereas skills that are required are not taught.

3. Many of the curricula designed for young children or low functioning students teach performance of generic, readiness, and preacademic tasks. These tasks include putting pegs in a pegboard, stringing patterns of beads, and completing picture puzzles. These tasks teach generic skills such as finger dexterity; color, shape, and size discrimination; and eye-hand coordination. Improvement in the performance of these generic tasks often does not generalize to an improvement in the performance of other tasks requiring the same skills (Hammill, 1982; Stokes & Baer, 1977) A number of authors have recommended that skills should be taught directly in the form in which they must eventually be performed (Baine, 1987; Bernbaum, Goodnow, & Lehman, 1974; Gersten & Carnine, 1984; Hammill, 1982).

In summary, many of the curricula fail to teach performance of tasks that are functional. Functional tasks are those frequently required in school, home, vocational, and/or community environments. These tasks include routine, daily chores as well as social, communication, and recreational activities related to the maintenance and development of the environment and one's physical, social, emotional, and intellectual conditions. Functional tasks may also include activities of low frequency but high importance, for example, treating a scorpion bite.

A number of writers have recommended a basic needs approach to curriculum design. A basic needs curriculum is based on an analysis of the social, cultural, and economic features of the geographic region in which the students live. These curricula teach the specific skills a defined group of students require to function in their daily lives. Academic skills are related to practical, common, daily task demands. The skills learned in math, social science, geography, history, science, and so forth are merged with practical skill training in, for example, agriculture, fishing, crafts, life skills, home and family management, health, nutrition, and cottage and service industries (Botti, Carelli, & Samba, 1979; Mellbring, Osterling, & Persson, 1983; Saunders & Vulliamy, 1983; Tietze, 1985; UNESCO/UNICEF, 1978). Several authors have also recommended that curricula should teach the skills required in both contemporary and future environments. The long-term needs of individuals, their families, and the community must be considered (Baine, 1986; Chege, 1984; IIEP, 1977; Hulley & Templer, 1984)

The remainder of this paper describes the use of an ecological inventory to develop curricula that incorporate the foregoing recommendations. These curricula are ecologically valid for contemporary and future

urban and rural environments in various Developing Countries. The ecological inventory techniques discussed are based on a modification and expansion of methods initially described by Brown, Branston, Hamre-Nietupski, Pumpian, Certo, and Gruenewald (1979). The purpose of an ecological inventory is the development of curricula for children and youth with various handicaps living in Developing Countries where the curricula would:

1. be ecologically valid for specific cultural, economic, geographic, urban, and rural environments in Developing Countries;
2. provide a comprehensive catalogue of norm-referenced, functional tasks from which specific tasks could be selected to build an individualized curriculum for a particular individual or a group of individuals with particular handicaps;
3. list functional, routine chores, academic, leisure, communication, and social-personal tasks required in contemporary and likely future home, community, school, and vocational environments;
4. list tasks that are chronologically age-appropriate permitting individuals to live as independently in as least restrictive and as normative a manner possible;
5. list compensatory skills required of individuals with specific types of handicaps; and
6. teach skills in the same form in which they must eventually be performed in the natural environment using the same equipment and materials commonly used (reduces problems associated with skill generalization).

Procedure

1. The target population for which the curriculum is being designed is defined in terms of age, type of handicap, level of functioning, and geographic location—urban or rural, slum or wealthy area. For example, the target group of students may be defined as educable mentally retarded, 6-12 years of age, of mixed caste Hindus, living in a rural farming or fishing village.
2. A broad variety of different types of families are selected to represent the target population. Each family has at least one handicapped person (child or adolescent) from the target group and at least one nonhandicapped sibling of the same sex and similar chronological age.
3. The boundaries of the home, community, school, and vocational environments in which the *non*handicapped individual is currently

performing are identified. The extent to which an individual participates in each environment usually increases with age. In a village, the home environment includes the indoor domestic, living, and recreational areas and may include the immediately surrounding outdoor areas where the family animals, garden, well, washing, and toileting are located.

4. In each environment, subenvironments are identified in which the nonhandicapped person is currently performing. For example, in a village, the community environment may include include such subenvironments as the fields where crops are grown, the village well, the market, the temple, a public meeting area, the river bank, and various connecting roads and pathways.

5. The boundaries of future environments and subenvironments are predicted.

   a. Inventories, conducted on persons from 1-5 years older than the target person, are reviewed to determine likely future environments, subenvironments, and task demands. Usually, when predicting future environments, it is sufficient to predict where individuals will be in one year except where major environmental changes are predicted such as movement from rural to urban areas; where a large number of skills are required and/or where the skills required may take a long time to learn. In these cases, depending on the learning ability of the children or adolescents in the target group it may be desirable to predict where the students will be in 3-5 years.

   b. Local trends are evaluated, for example, migration to cities, and increasing or changing industrialization or mechanization. Relevant information may be obtained by interviewing members of the village council, as well as representatives of education, health, industry, and social service agencies.

6. Functional tasks are identified that the nonhandicapped individual performs in each subenvironment. For example, at the village well, tasks may include bathing (self or others), washing clothes, washing cooking equipment, and getting drinking and cooking water.

Functional tasks performed by nonhandicapped children may be identified in the following ways.

   a Each environment and its subenvironments are separately reviewed in the following order: home, community, vocational (if relevant), and school. The home inventory provides information about current and future community, school, and vocational environments. Leaving the school inventory to last provides the

opportunity to evaluate the ability of the school program to train functional skills required in the other environments.

b. Within each subenvironment, the following tasks are identified: common daily task demands fulfilled by the nonhandicapped person, tasks performed at commonly occurring special events, and tasks performed during various seasons. Routine chores, as well as recreation, communication, and social-personal activities are identified. Also identified are low frequency tasks of high importance, such as putting up storm shutters before a hurricane.

This information may be gathered in the following manner:

a. Parents, teacher, employers, and/or other knowledgeable informants may be given a specially designed diary format on which to record the sequence of common, daily, task demands (routine chores, recreation, communication, and social-personal activities) over a two-week period. Questions in the diary may also prompt recording of low frequency tasks of high importance and recording of tasks performed during special events or various seasons. Even if the diary is not completed in a satisfactory manner, discussion of the type of information required and the purpose of the study may prompt informants to attend to daily activities and increase readiness for the interviews that follow.

b. Following completion of the diary, an interview is conducted to clarify any information provided and/or to fill in any missing information. In addition, the interviewer may ask who performs (helps with) specific commonly performed tasks? Are special tools, materials, and/or equipment used? The information obtained from these questions and from the observations may be used to make the training environment as similar as possible to the natural environment with respect to tools, materials, and equipment. Similarities between the two environments may facilitate generalization of learning from the training environment to the natural environment.

c. Alternatively, instead of using a diary, interviews of parents, teachers, employers, and the invidividual under study may proceed directly to gain the same information as sought in (a) and (b) above

d Comprehensive observations may be made of common daily task demands in each subenvironment, or selective observations (probes) may be made of particular situations for which little information was available from the diaries and interviews Also,

observations, may be made of performance of specific tasks to identify the steps involved and the tools, materials, and equipment used.

e In the home, school, and vocational environments, information can be gained, respectively, from interviews of parents, teachers, and employers, and from observation of the activities being performed. In the community environment, however, information may be gained most effectively from observations made in selected community subenvironments of a random selection of individuals of the same sex and similar age as the individuals under study.

During the preliminary interviews, the community subenvironments in which the individual performs are identified, as are the times and types of activities Observations are then made in these subenvironments of the performance of these activities by a variety of individuals of the same sex and similar age as the individual under study

f As with the other environments, the school environment is inventoried to determine the tasks associated with routine chores, recreation, communication, and social-personal activities, as well as the task demands of the regular curriculm. the curriculum designed for students with handicaps, and the validity of these curricula to teach the functional skills required in the home, school, community, and vocational environments

g. While each environment and subenvironment is being inventoried, an attempt is made to identity the frequency with which each task is performed and the number of subenvironments in which the task is performed. This information is used to determine the relative importance of the activity.

7 From all the tasks identified during the inventory of nonhandicapped children, tasks are selected that individuals with handicaps in the target population may be expected to learn during the next 1-5 years as a result of direct instruction and/or prostheses. The relative importance of each of these tasks to the handicapped person is evaluated using the following Task Importance Rating Scale.

To use the Task Importance Rating Scale, it is often useful to form a small committee of people familiar with teaching and with the type of persons in the target group for which the curriculum is being designed. Initially, each committee member should independently rate the relative importance of each task to members of the target population Each committee member, with experience, can quickly mentally review each item

Task Importance Rating Scale

	The importance of each task may be judged by its likely contribution to:	none	low	medium	high
a	learning functional skills	–	–	–	–
b	increasing social acceptability	–	–	–	–
c	learning chronological age-appropriate skills	–	–	–	–
d	increasing the opportunity to learn additional skills	–	–	–	–
e	learning survival skills	–	–	–	–
f	improving performance in a variety of environments	–	–	–	–
g	increasing opportunities to interact with nonhandicapped people	–	–	–	–
h	increasing ability to fulfill frequent opportunities to perform	–	–	–	–
i	increasing ability to perform in less restrictive environments	–	–	–	–
j	improving health	–	–	–	–
k	improving safety	–	–	–	–
l	increasing opportunities to understand/express thoughts and feelings	–	–	–	–
m	increasing opportunities to enjoy social-emotional-recreational life	–	–	–	–

in the scale and give an overall rating of low, medium, and high importance in relation to other tasks the student may be required to learn. When large differences in the rating given to a particular activity occur, members of the committee may review and discuss each of the rating items in detail. These discussions can provide an excellent opportunity to review, revise, and develop values.

8 Tasks that are rated as relatively unimportant are eliminated. The remaining tasks are organized into a catalogue according to the environments, subenvironments, and activities in which they are performed. The relative importance of each task is indicated. For example, in the home environment, kitchen subenvironment, food and water storage activities may involve the following tasks: spraying for insects (H); cleaning food and water containers (H); and storing food in clean, dry, cool, and insect protected locations (H). Each of these tasks has been rated as high (H) in importance.

9 The tasks listed within the catalogue may be task analyzed to determine the individual subskills students must learn to be able to per-

form the task. The tasks may be task analyzed while they are in the catalogue or after they have been selected to be included in the curriculum for a particular individual or group of individuals. The skills should be task analyzed while in the catalogue if instructional personnel using the catalogue at a later time do not have the time and/or expertise to analyze the skills. Alternatively, if the task analysis is conducted following selection of the tasks for use in a curriculm designed for a particular type of learner, the tasks may be divided into larger or smaller units to better suit the abilities of the learner(s).

10. Parallel to the inventory of tasks performed by the nonhandicapped individuals, an inventory is conducted of the children or adolescents with handicaps. Any functional tasks performed by the handicapped individuals that are not required of nonhandicapped persons (e.g., cleaning and adjusting a hearing aid) are identifed. Also identified are any compensatory skills individuals with specific types of handicaps are required to learn (e.g., communicating with sign language). Tasks that are currently performed by the individuals with handicaps and that require further instruction are also identified. These tasks are analyzed and listed in the curriculum as in steps 7, 8, and 9, above.

11 The curriculum is then reviewed to ensure a suitable proportion of tasks has been selected from each of the following categories: home, school, community, and vocational environments; tasks required in current and future environments; and routine chores, communication, recreation, and social-personal activities. The appropriate proportion selected from each category depends on the level of functioning of the students involved, and the number and type of skills required. Some older inviduals may have acquired most of the basic home and community skills and the major emphasis in the curriculum may be vocational. Other students who are unable to acquire vocational skill may benefit from a greater emphasis on home and recreational skills. For other students, a focus on nonacademic skills may be most appropriate.

Note

1. Following the Alternative Futures Conference at which this paper was originally presented, the paper was submitted to the *Indian Psychologist*

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A Data-Based Curriculum and Program Monitoring System for Deaf/Blind, PMH Secondary Students

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Abstract

The purpose of this project was to provide vocational training to four deaf/blind, profoundly mentally handicapped, secondary students at the Monarch Center School Board of Alachua County in Gainesville, Florida. The training program was designed to develop the students' potential work and work-related skills. Students were taught skills in the areas of horticulture, sorting/packaging, assembling, mobility, and dressing. Because the project stressed the importance of skill functionality and age-appropriate materials (Snell, 1983), project staff hoped to develop the ability of these individuals to perform tasks similar to those performed in sheltered workshops and, where warranted, place the students in such environments. Through intensive one-to-one training, it was hoped that students' performance would develop to levels acceptable for placement in sheltered workshops at the Sunland Center (a State residential institution for mentally handicapped persons) or in the community. Attaining such skill levels would permit the students to continue their progress toward higher levels of normalization.

Curriculum

A functional set of curriculum objectives was designed and included skills in the areas of horticulture, sorting/packaging, assembling, trailing, and dressing Accordingly, the primary objectives were to have students develop:

1. horticulture skills involving planting seeds in pots, placing pots in watering trays, and planting seedlings in garden plots;
2. a sorting/packaging task entailing a variety of discrimination skills involving the placement of materials of various sizes and shapes into appropriate containers,

3. assembling/disassembling skills involving items such as jars, thermoses, and turning valves;
4. trailing skills requiring students to follow guide fences to and from the workshop; and
5. dressing skills involving students putting on and removing coveralls and work shoes.

Information gathered through a performance monitoring and evaluation system was used to determine the curricular needs of each individual and to provide a means for formative revisions of objectives.

Methods and Procedures

Four 18 to 20 year old persons who had been institutionalized for most of their lives participated in the program. All four students were functioning at or below a two-year developmental age. One student had some residual hearing, while another had some residual sight. One student displayed low rates of chronic, self-abusive behavior.

Daily Schedule

Students were provided with training and practice through the guidance of their classroom teacher and four teacher aides. Training was provided four days a week for three hours in a one-to-one, student-to-aide arrangement. During each session, the students were assisted to dress for work and practice trailing to one of the future work sites. On returning to the classroom, each student reported to one of four training stations where he or she was evaluated and practiced specific task responses or task response sequences. After completing work at two stations, the students were provided a work break. They walked to another area of the room, sat at a table, and had a snack consisting of various foods and beverages. After students had completed all four stations, they practiced trailing from the work site and changing back into their school clothes. This daily schedule was devised to simulate a workshop environment so that transitions to such an environment would be less difficult.

Students spent 25 minutes at each station and then rotated to another work station. One station was designed for horticulture training, one for sorting, one for packaging, and one for assembling. The horticulture skill training involved students potting seeds and placing containers into watering trays using a forward chaining technique (Snell, 1983). In addition, students planted seeds and seedlings in a garden outside the classroom. Training in sorting entailed various levels of tactile discriminations of shop materials (e.g., nuts, screws, washers) and domestic materials (e.g., sponges, utensils, brushes). The packaging

station involved students placing sets of shop materials into bags and putting domestic items into various containers At the assembly station, students were taught to assemble and disassemble items such as jars and thermoses and to turn valves

Promoting Responses

During instruction in all skill areas, students were guided through task responses by the aides As proficiency increased, the degree of guidance decreased. A series of prompts, from most intrusive to least-intrusive, were used for this purpose (Tawney, Knapp, O'Reilly, & Pratt, 1979). In the initial stages, the students were given physical assistance to perform each task response. This entailed the full manipulation of the students' arms and hands by the aides. A lesser prompt was used to provide physical assistance (i.e., gentle taps) as a student performed a task response. For those with functional vision, the next level of prompting was a visual prompt such as the aide pointing to the location of an object needed for the task response At the same level, for students with functional hearing, a verbal prompt such as "stop" was used Ultimately, attempts were made to reduce prompts, to the extent possible, to promote independent responding (Liberty, Haring, & Martin, 1981).

Direct Instruction

An instructional sequence, based on the Direct Instruction Model (Carnine & Silbert, 1979), was developed and used. Accordingly, the aides had students move through a three step process. In the first step, demonstration, the aides led students through the task response using physical assistance. This step was repeated several times to reinforce the saliency of the response model. Next, the aide followed a guided practice procedure; that is, the aide had students practice the task response or a component of a response task sequence with physical, verbal, or visual prompts Reduction of the level of assistance allowed students to practice the response more independently, but prevented them from practicing errors (Sailor, Wilcox, & Brown, 1980) This approach also afforded the aide an opportunity to test the student and determine whether the student was capable of performing the task response with further reduction in the level of prompting. During the final step, independent practice, students were required to practice successive responses independently or with minimal, intermittent prompting. As the accuracy of independent responding increased, the focus of practice became fast and accurate responding

Data-Based Decision Making

To monitor student progress, a daily evaluation system was devised. During the first five minutes at each station, students were evaluated

on acquisition and maintenance skills. The aides observed student performance on each trial. The aide recorded whether the task response was completed successfully and which, if any, prompts were used to guide the student through the task. The number of successful trials was tallied for each level of prompting (e.g., physical assistance, physical prompt, visual or verbal prompt, and independent response) and divided by a predetermined time interval to compute a rate measure of trials per minute. These data were then entered into a microcomputer and processed to create time series performance charts. The graphs were inspected to determine progress and to make instructional decisions for individual students.

Using performance data collected over the past 2.5 years, we established criteria for moving students onto a higher level or parallel objective. These criteria were based on the attainment of satisfactory rates of performance or extended periods of time without progress. Students were moved to new objectives when target skills reached a level of three to five trials per minute at the independent or prompted response level and were maintained for at least one week. When students maintained a performance plateau for three weeks without reaching criteria or, when performance levels deteriorated, students were moved to a lower or parallel objective.

In addition, progress graphs reflecting a student's cumulative mastery of a set of objectives were plotted. Progress graphs provided a more succinct and broader illustration of a student's long-term development (Deno & Merkins, 1977). Figures 1 through 4 contain the progress graphs of each student participating in the project over the last academic year. The cumulative graphs depict progress collapsed across domains.

Results

Considering the general level of functioning of students participating in the project, the results are indicative of substantial progress for three of the four participating students. One student demonstrated less progress than the others, but nonetheless made gains in her skills. Table 1 provides a sample of the specific curriculum objectives from each domain on which a particular student was working. Each student had an individually suitable set of objectives. The first two columns indicate dates of initiation and completion, respectively.

Elder successfully completed 17 objectives across three curriculum domains. In the area of sorting, he worked on sorting combs, variously-sized rods and spoons, and mixed bins of washers and bolts. In addition, he mastered the rudimentary packaging skill of placing a disassembled lid onto a box and the more advanced skill of taking a plastic box and a sponge from separate containers, placing the sponge in the box, closing

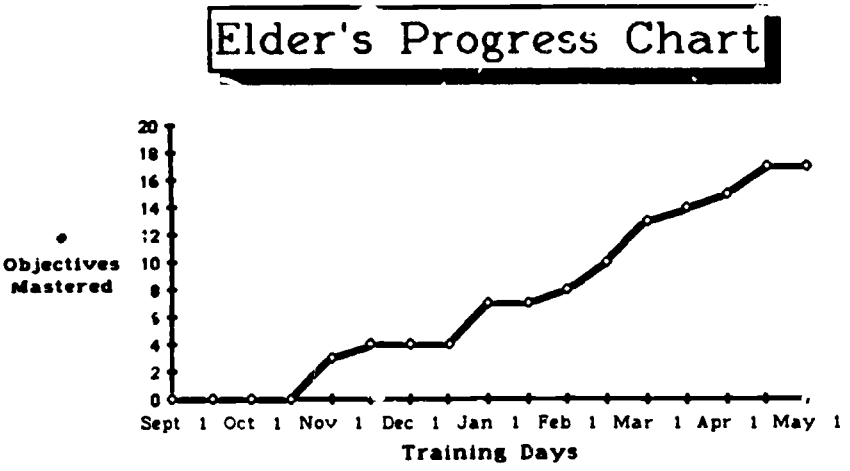

Figure 1: Elder's progress chart measuring the number of objectives mastered across instructional domains during the last academic year

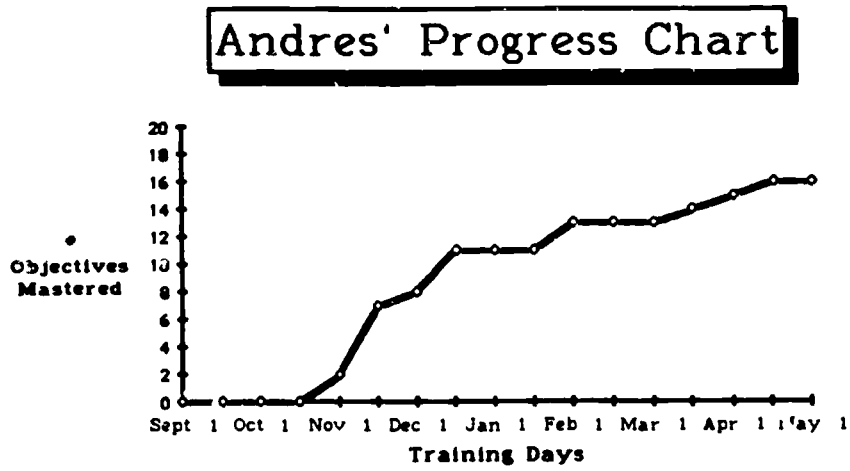

Figure 2: Andre's progress chart measuring the number of objectives mastered across instructional domains during the last academic year

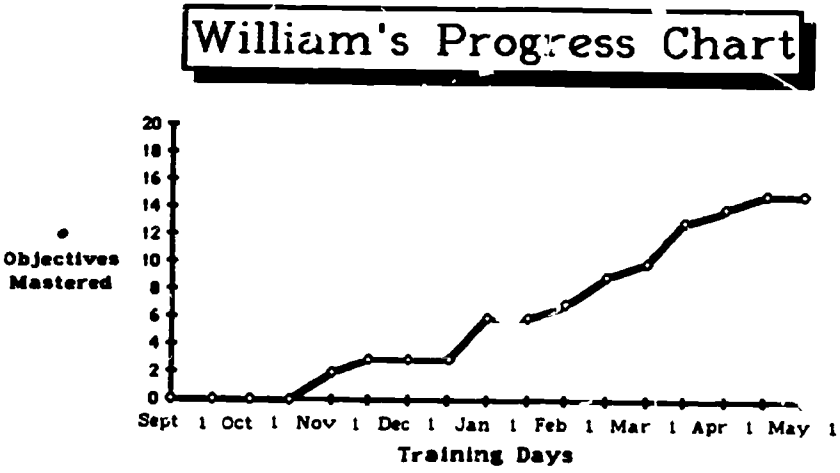

Figure 3: William's progress chart measuring the number of objectives mastered across instructional domains during the last academic year

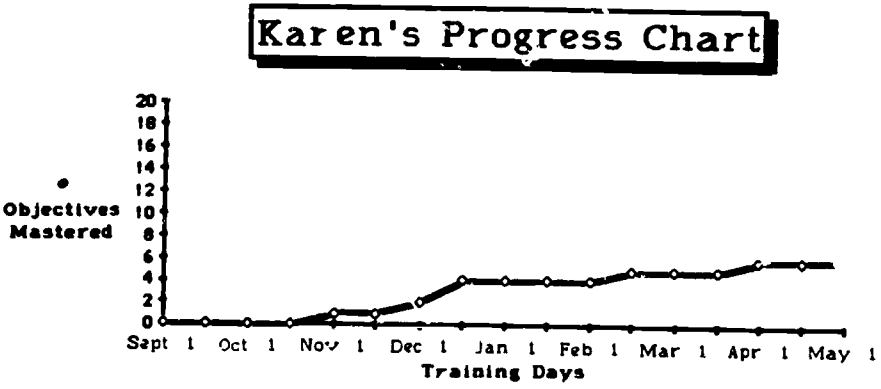

Figure 4: Karen's progress chart measuring the number of objectives mastered across instructional domains during the last academic year

the lid, and placing the box in a third compartment The most difficult aspect of the latter skill was to have Elder exert enough pressure on the lid to snap it shut After several weeks of guided practice on this subskill, Elder finally made the necessary response. In the planting domain, he mastered the first two steps in a response chain. He was able to locate and grasp the plastic pot and scoop potting soil from a tub into the pot. Elder's most notable improvement in the quality of his responses was the increased agility and smoothness of his motions. This qualitative change, however, was not necessarily reflected in the data. Although the quality of his motions improved dramatically, his rate of responding did not improve concurrently.

Andre performed at a substantially higher level than that of the other three students. He mastered a comparable number of objectives during the past year, but the response tasks were much more sophisticated. In the sorting domain, Andre mastered sorting variously-sized rods and washers as well as sorting mixed bins of nuts, bolts, and washers in small drawers and replacing the drawers in a cabinet. In the packaging domain, Andre mastered counting out sets of four nuts or washers using a four-celled tray. The task required the student to place a single item in each cell and then to dump the tray into the large mouth of a funnel feeding into a bag. Andre also mastered placing a disassembled lid onto a box and taking a plastic box and a sponge from separate containers, placing the sponge in the box, closing the lid, and placing the box in a third compartment. In the planting domain, Andre mastered the full response sequence for potting seeds. He was working on a variety of other objectives involving planting flowers and vegetables and maintenance of the garden area.

The third student, William, mastered 15 objectives over the past academic year. Seven of the objectives were from the sorting domain and ranged from the rudimentary skill of sorting individual objects such as spoons and sponges to sorting variously-sized rods and sponges. In addition, he mastered four of the objectives from the packaging domain including bagging nuts from a tray and taking a plastic box when handed to him, placing a sponge inside, closing the lid, and placing it in a divider box The basic turns domain appeared to have posed a greater challenge to William To date, he mastered only one of five objectives by demonstrating the ability to turn a ring one revolution counterclockwise. He demonstrated more success in the planting domain by mastering three objectives. He located and grasped the container, scooped soil from the bin, and placed seeds into a container. As with Elder, William's progress was not fully represented in the numeric data. William's most notable changes were in the quality of his movements. He demonstrated

Table 1

CURRENT OBJECTIVES
Elder

1 SORTING TO BINS

9/16	10/28	1313	Sort rod from jig to bin
9/16	11/6	1314	Sort rod from one bin to another bin
11/6	12/16	1321	Sort large & small rods when handed to two bins
1/16	1/29	1322	Sort large & small rods from table to two bins
1/29	4/15	1323	Sort large & small rods from jig to two bins
5/1	____	1324	Sort large & small rods from one bin to two bins
5/1	____	1331	Sort wood, metal, & plastic rods when handed to three bins
5/1	____	1332	Sort wood, metal, & plastic rods from table to three bins
9/16	10/28	1143	Sort nuts & bolts from one bin to two bins
10/28	12/16	1151	Sort bolts & washers when handed to bins
1/16	2/15	1152	Sort bolts & washers from table to bins
1/30	3/1	1153	Sort bolts & washers from one bin to two bins
9/16	10/28	1542	Sort four different sized spoons from table to tray
10/28	12/16	1543	Sort four different sized spoons from bin to tray
1/16	3/1	1411	Sort comb when handed to bin
3/13	4/1	1412	Sort comb from table to bin
3/13	____	1413	Sort comb from one bin to another bin
5/1	____	1421	Sort brush when handed to bin
5/1	____	1422	Sort brush from table to bin
5/1	____	1423	Sort brush from one bin to another bin

2 SORTING TO DRAWERS

____	____	211	Sort large, medium & small nuts when handed to drawers

3 PACKAGING

10/6	____	3111	Bags nuts from tray
10/6	3/15	3214	Take plastic box and sponge from left hand divider box, place sponge inside, close lid and place in divider box
1/16	4/15	3211	Place lids on boxes when handed
5/1	____	3312	Place lids on boxes from table
5/1	____	3313	When materials are handed, place insert in box, place lid on box and push lid closed
5/1	____	3411	Close lids of boxes
5/1	____	3412	Place sponge in box and push lid closed

4. BASIC TURNS

5/1	____	4221	Using insert board, screw bottle top on clockwise
5/1	____	4321	Using insert board, screw bottle top on clockwise
3/13	____	4411	Using insert board, unscrew cup counterclockwise
3/13	____	4412	When handed, unscrew cup counterclockwise
5/1	____	4413	When handed, screw leg clockwise
5/1	____	4414	Take leg from divider box and screw leg counterclockwise

5 PLANTING

9/16	3/1	5111	Locates and gasps container
9/16	2/15	5112	Scoops soil from bin
5/1	____	5113	Places seed into container
5/1	____	5114	Push seed into soil
9/16	____	5115	Places container in watering tray

a considerable improvement in the agility of twisting his wrist when scooping soil and when placing pots into the watering tray.

Karen's progress in all four of the domains was less consistent than that of her peers. She demonstrated the most success in the sorting domain in which four out of nine objectives were mastered. Sorting sponges and rods was mastered in less than three months for each objective. Sorting spoons from table to tray and sorting spoons from bin to tray were mastered in approximately six weeks. Karen was introduced to the packaging, basic turns, and planting domains although mastery of each of these objectives continued to be in the acquisition stage. Karen's progress was reduced by her self-injurious behaviors. Up until the last six to eight weeks of the academic year, Karen exhibited serious head-banging behavior almost on a daily basis. The school's behavior specialist devised various behavior management strategies for the aides to use when Karen participated in the project. The treatments were generally ineffective and at times Karen required extended periods of time-out or physical restraint which significantly reduced her instructional time.

Conclusion

The value of functional vocational skills for severely handicapped individuals has been broadly defended on personal, social, and economic grounds. Vocational training appears to promote individual growth, expand one's social circle, enhance social status, provide the means participate in normal activities to the extent feasible, and allows one to contribute to the life of a community (Snell, 1983). Data from the

present project are evidence that deaf/blind, profoundly mentally handicapped students can develop a work history while in school that documents successful performance of a variety of skills. Training of these skills appears to have encouraged student independence, provided information about the external world, and facilitated student progress toward higher levels of normalization.

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Assessment and Rehabilitation of Severely Socially Deprived Deaf Adults

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Abstract

The paper discusses specific concerns and issues related to the assessment of profoundly deaf clients. Data on 11 profoundly deaf clients are used to illustrate the problems involved in assessment, and practical strategies for assessment are presented.

This paper reports data on 11 profoundly deaf clients who present special problems for both assessment and rehabilitation. They are clients who have been described by Judge Alan T. Cooke of the Court of Queen's Bench in Alberta as not communicating in sign language or other known "gestural" communication, suffering from severe social deprivation, and incapable in Court (or elsewhere) of understanding proceedings or processes which have a direct effect on their emotional, social, and psychological well-being (Regina vs. Shupe, 1987). Interestingly, the same judgement makes a plea for the provision of appropriate rehabilitative services, and it is the lack of these services and of adequate assessment techniques which precipitated our involvement as a university clinic.

Little research has addressed the assessment and rehabilitation of these clients. However, much of the work that has been done in the area of psycho-educational assessment, both prior to and as a result of legislation such as Public Law 94-142 in the United States and Bill 82 in Ontario, is relevant. The legal requirement for nondiscriminatory, multidisciplinary testing conducted in the child's native language or mode of communication has focused interest on the holistic types of assessment and rehabilitation or program planning which we also advocate.

Sources such as *Nondiscriminatory Multifactored Assessment* (Barnett, 1983) and *Low Incidence Children: A Guide to Psyhocoeducational Assessment* (Ray, O'Neill, & Morris, 1983) provide an introduction to many of the issues involved in placement of these exceptional needs individuals. Specifically addressing concerns dealing with hearing im-

paired individuals, *Hearing-Impaired Children & Youth with Developmental Disabilities: An Interdisciplinary Foundation for Service* (American Speech-Language-Hearing Association, 1985, edited by Cherow) is another recommended source.

The Clients

Each of the clients who form the focus of this paper had one or all of four characteristics. They were, or were thought to be, deaf. They were unable to communicate effectively even with those skilled at communicating with deaf students or adults. They were regarded as "unteachable" and/or had been erroneously assessed in the past. They were unable to benefit from or had been excluded from previous placements or rehabilitative services but were in considerable need of such services. At one extreme was the client who was "living rough" and eating out of garbage cans; at the other extreme was a client who held a minimally skilled job as a dishwasher and had a supportive family, but had been charged with a major offence by the police.

Six of the clients were male, five were female. Two were less than 20 years of age, four were 21 to 25 years, and five were over 40 years of age. Eight of the clients had either no expressive/receptive communication skills or only very basic gestural/American Sign Language (ASL) skills; the other three had rudimentary English/lip reading skills. In nine cases, there were major questions about placement, guardianship, or antisocial behavior; in two others, the questions were concerned with vocational guidance or remediation. Three clients were referred by the public guardian, two by the court, five by social service agencies and one by the court and the public guardian One client was not deaf; one was classified as "central deafness." A brief synopsis of the case of L.R. will serve to illustrate a typical client seen in our clinic.

> L R was the fourth of eight children in a family characterized as experiencing serious social, economic, and health problems Six of the eight children and the mother were reported to be functioning at a low intellectual level L R and a younger brother, also deaf, attended a school for the deaf in Western Canada as day students For some time after leaving this school (at the age of eighteen), there is little information recorded concerning placement or rehabilitative services At about the age of 31 years, records are again available and refer to behaviors which indicate L R was "living rough," that is, eating from garbage cans, sleeping wherever possible, and similar asocial behavior From 31 years to 40 years of age L R was living in a residential home for mentally handicapped adults and then in a group home for deaf adults
>
> L R was referred to our clinic in preparation for an upcoming court appearance He had been charged with assault following an incident involving touching and pestering a woman She was previously unknown to him The behaviors which brought about these charges were not an isolated incident Criminal charges, however, had not been laid in previous instances An assessment of L R 's ability

to understand the charges pending against him and an indication of the potential for improving his communication skills were requested Also required were recommendations regarding appropriate placement and remediation

A careful review of previous assessment history provided some information regarding this case Notations of "mentally handicapped" and "mild mental retardation" were seen in reports along with descriptions of behavioral and social difficulties

The assessment team consisted of a certified psychologist with specialization in exceptionalities and individualized intelligence testing, a sessional instructor with specialization in oral communication, an educational consultant with specialization in auditory functioning, and a certified psychologist and professor of Educational Psychology Certified interpreters and a reverse-skills interpreter worked with the team.

L R was unable to read and able to write only a few words Sign vocabulary was limited to approximately 25 concrete concepts Many behaviors were associated with a pattern similar to those shown by a client with a long history of institutionalization. Touching, putting his arm around women, and similar related actions are a form of behavior reinforced by institutional handling There was nothing to suggest that they had a sexual intent

Using a wide variety of standardized and nonstandardized measures and techniques, L.R. was found to be of normal or above normal nonverbal intelligence, but he exhibited major developmental deficiencies. Inadequacies of educational and vocational experiences were seen as a probable explanation. This conclusion was based on the results of both formal and informal assessment procedures, clinical experience, and clinical judgement.

Our conclusions and recommendations specifically stated that L.R. would not be able to understand legal proceedings or communicate adequately about legal matters. Understanding of moral concepts was limited not by innate ability but by educational and social history. As a result, he would have little understanding of the consequences of his actions unless this was systematically communicated to him through a carefully developed and properly implemented program of behavioral change. Recommendations for such a supportive program, in his present group home, were made.

Criminal charges were eventually stayed in the case of L.R. Though beneficial to L.R. in some respects, such an outcome removes the possibility of court-ordered rehabilitative services. It means that the provision of ongoing support and rehabilitation will be that much more difficult in the future.

Assessment

A full assessment of clients such as L R. is difficult, time consuming, and unless well done, can be highly misleading. In our clinic, a full bat-

tery includes an assessment of (a) functional communication skills; (b) a specific assessment of manual communication skills including ASL, Pidgin Signed English (PSE), finger spelling, and Manually Coded English (MCE); (c) an assessment of receptive English language skills with manual English cueing, auditory cueing, and/or lip reading cueing; (d) an assessment of expressive English language skills using vocalization; and (e) a general psychological assessment of cognitive, academic (reading, math, writing), and psychosocial/behavioral skills. In all assessments, clinical observation is a vital and major component, and to date no client has had sufficient speech to allow for assessment of spoken English skills. All the clients have minimal reading and writing skills.

Functional Communication Skills

The evaluation of functional communication skills, usually of a sign/gestural type, is perhaps the most innovative area of our clinical practice. There are three main components to this evaluation.

First, a checklist of functional communication skills is used to assess the pragmatic aspects of communication (Correia & Sobsey, 1984). Second, we may use techniques developed by Richard Sobsey and Marlene Spencer to assess "interpreter" reliability. We find that in many cases, contextual cueing allows caretakers who act as interpreters, to make assumptions about communication which are not warranted. For example, the understanding of "eye point" with a Bliss Symbol board can be seriously biased if the interpreter knows the questions being asked of the client. In some extreme cases, we find that in the absence of auditory cueing, the interpreter's performance is no greater than would be predicted by chance. *Such a finding invalidates much if not all of the previous diagnostic information on the client.*

Third, we use both hearing ASL interpreters and reverse skills interpreters to assess functional aspects of communication. A reverse skills interpreter is a deaf person with special skills in communicating with other deaf people and with a formal knowledge of both ASL and English. The focus of the evaluation is on the semantic and syntactical content of the client's communication system and on the underlying conceptual system. We find in many cases, that the clients have a developed, even highly developed, conceptual system but a very idiosyncratic and personal communication system.

Other Tests

Other tests that we have found useful in assessing these clients are the Test of Communication Skill (Grove, O'Sullivan, & Rodda, 1979) and assessment of vocalization using the traditional techniques of the speech pathologist When used appropriately, good tests for intelligence

are the Wechsler Adult Intelligence Scale--Revised (Wechsler, 1976), the revised Standford-Binet (Thorndike, Hagen, & Sattler, 1986), the new British Aptitude Scale (Elliot Murray, & Pearson, 1983), and the progressive Matrices—Revised (Raven, 1977). For reading, we usually use the Woodcock Reading Mastery Tests (Woodcock, 1973), and for Math we usually use KeyMath Diagnostic Arithmetic Test –Canadian Edition (Connolly, Machtman, & Pritchett, 1979) For writing, we use the Test of Communication Skills for an analysis of overall abilities and specific techniques.

It should be emphasized that in all cases the rigid use of any formalized normative test is inappropriate. Norms based on general population statistics, or even those based on populations with specific identifiable handicapping conditions, may not be appropriately used for comparison with the severely socially deprived deaf adult. History, present abilities, communication, and behavioral differences will combine to make such comparisons unhelpful at the very least and can often be detrimental to the best interests of the client. Such comparisons may tend to present an unclear overall impression of the client's personal strengths and weaknesses, and clinical experience is a vital prerequisite to their use. We often have to violate the procedures for test administration. Communication difficulties and unusual behaviors may make it impossible to follow standard administrations For example, the use of a reverse skills interpreter, which may be necessary to evoke the most meaningful responses, invalidates assumptions of standard administration and the subsequent normative comparisons. Idiosyncratic behaviors and communications cannot be truly assessed for functional adaptation without careful observation and clinical judgement. The combined experience of the team serves to ensure that practical assessment skills and judgement are interdependently utilized with test or assessment batteries. If these conditions are not met, tests of this type can be highly misleading.

Conclusions

As long ago as 1966, Denmark identified a serious problem of misdiagnosis of some profoundly deaf individuals (Denmark, 1966). The problem continues, and all of the clients referred to in this report have a history of misdiagnosis and placement in inappropriate institutions or rehabilitation facilities. Unfortunately, the problem is only usually identified when a crisis occurs, either of a familial or social nature. Such problems arose even in the case of the six of the 11 clients whose "only disability" was deafness. The problem is essentially one of inadequate early education, lack of appropriate support systems for clients and their families, and a lack of qualified teachers, social workers, and interpreters

Assessment should only be undertaken by an experienced and qualified team. Interestingly, when this is done, prognosis is much better than is generally predicted, provided an intensive and supportive rehabilitation program is available It is the lack of such programs that is the primary obstacle preventing longer term solutions, and as Justice Alan T. Cooke says:

> I am aware that a stay of proceedings in this case creates a third status somewhere between unfitness to stand trial by reason of insanity and fitness to stand trial and thereby subject to the sanctions of the law Cases such as this will face the criminal justice system with such frequ y that Parliament, in my view, should address the problem (Regina vs Shupe, 1987)

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Transition in Minnesota

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Abstract

This paper reviews problems and recommendations related to the transition of youth from school to work following special education programs in Minnesota. The results of several state-wide studies in Minnesota are reported. The studies include: a) a review of the employment status of former special education students, b) a survey of needs, c) a study of the barriers to effective transition, and d) a survey of parents. The paper also describes Minnesota's efforts to improve transition services. These include establishment of an Interagency Office of Transition Services. Recommendations for future improvements in transition services are reviewed.

Introduction

One of the most important questions public schools are beginning to address is "What happens to youth with disabilities after they complete special education programs?" In recent years, there has been increasing evidence indicating that the hoped-for goals of employment, community living, and social and leisure opportunities have not been achieved by many youth with disabilities following completion of school. Recent studies, for example, show that between 50% and 75% of working-age adults with disabilities are not employed (U.S. Commission on Civil Rights, 1983). Other national and Minnesota studies reveal that insufficient coordination between schools and community service agencies is one of the most significant barriers to the development of effective services designed to meet the post-school needs of youth with disabilities (Halpern, Close, & Nelson, 1986; Minnesota Department of Education, 1986; Wehman, Kregel & Barcus, 1985).

In response to these growing concerns, Minnesota has placed a high priority on improving the transition of graduating special education students. In 1985, the Minnesota State Legislature established the Interagency Office on Transition Services. The overall mission of this office was to coordinate interagency planning that would provide handicapped students leaving Minnesota public schools with post-school options relating to employment, living arrangements, social life, and family involvements. In 1987, the Minnesota State Legislature passed amend-

ments that required transition planning for individuals as part of the IEP process and the establishment of interagency community teams.

The following discussion is intended to increase the awareness of policy makers, professionals, parents, and the general public regarding the current status of Minnesota's efforts to assist students and families make a successful transition from school to work and community living. The material discussed is based on *Transition: A Report on Minnesota Youth with Disabilities* (Minnesota Department of Education, 1987).

The Charge

What happens to students after they leave public education? What are the responsibilities of schools and community service agencies for assisting students to make the transition from school to the community? The transition from school to the community can be extremely difficult in the absence of long-term planning regarding where students will live, work, and socialize in the community, and what skills they will need. Sometimes questions about the future are asked too late, and adequate planning fails to occur.

The charge of special education, in collaboration with other community service providers, is to provide better and earlier planning to enhance the full range of adult life opportunities for youth with disabilities. Transitional planning currently ranks as one of the top federal priorities of special education and vocational rehabilitation programs across the nation. Minnesota has undertaken several recent initiatives to improve transition services statewide. Improving transition services requires the sharing of responsibilities among education and community service providers In the U.S., vocational rehabilitation/habilitation services are provided through state agencies and play a key role in transition.

The Need

The extent to which special education programs are successfully preparing students for adult life has been the subject of recent state-level studies in Minnesota. These studies address the following questions.

How do our graduates fare in the community?

The Minnesota Post-School, Follow-Up Study (Bruininks, Lewis, Thurlow, and Larsen, 1987) reviewed the community experiences of over 400 former special education students. The findings of this study are reported below.

1. 9% of the former students with moderate/severe handicaps have full-time, paid employment; another 32% have part-time employment.

2. 54% of the former students with mild handicaps have full-time, paid employment; another 28% have part-time employment
3. 25% of the former students with mild handicaps and 1% of those with moderate/severe handicaps are living on their own; most persons (61%) with mild handicaps are living with parents, and most persons (59%) with moderate/severe handicaps are living in group home, residential placements.
4. A main concern reported by former students is loneliness; few have friends, most spend a lot of time watching TV and have minimal social life.
5. Parents have significant concerns about what will happen to their children when the parents can no longer care for them.

How well do we prepare students and provide assistance to families?

The findings of the *Minnesota Transition Needs Assessment Study* (Minnesota Department of Education, 1986) provide information on the status and adequacy of school programs in preparing students for transition and in providing assistance to families. The survey reported the following findings.

1. Professionals and parents felt that, overall, current school assessment and instructional practices were only moderately helpful in planning for the post-school needs of youth with disabilities.
2. Parents and professionals felt strongly that it was very important to prepare students for future adult life activities such as employment, community living, and citizenship. Generally, both groups felt that schools were doing only moderately well in these areas.
3. Parents reported that their sons/daughters were or would be only somewhat prepared for adult life.
4. 51% of the parents reported that IEP goals and objectives related to the post-school needs of their sons/daughters were not being discussed with parents.
5. 52% of the parents indicated that they were not familiar with the types of community services available for their sons/daughters following the transition from school. There was not a clear consensus as to whether the school, community service agencies, or both should be responsible for collecting and sharing this information with parents.
6. 73% of the professionals reported that the schools were not following up to assure that post-school services required by students were

actually being received. These services were considered to be important to the post-school success of graduates

What are the barriers to effective transition planning and coordination?

Other studies conducted in Minnesota have provided additional information about barriers to effective transition planning and interagency cooperation. Problems identified as relating to the development of local interagency planning are described below.

1. The participants lacked sufficient knowledge about methods of developing systematic goals and/or objectives for meeting the transition needs of students.
2. There was a lack of commitment to a long-term interagency planning process necessary to develop effective relationships between agencies.
3. The concept of "transition" was neither clearly defined nor sufficiently understood by all key personnel in state and local agencies responsible for providing services to secondary-aged and young adult students/clients.
4. Practices of coordination and cooperation among providers of services to handicapped persons tended to be informal and needed to be improved if transition services were to be effectively achieved in Minnesota.
5. There was wide variation in program availability and in the levels of service.

Minnesota's Vocational Rehabilitation Agency, with substantial assistance from parents and advocates, surveyed parents of transition-aged recipients of vocational rehabilitation services An unexpectedly high return rate yielded the following recommendations.

1. There should be earlier rehabilitation counsellor involvement in planning individual educational plans.
2. More parent participation is required in all aspects of planning (educational, vocational, and social services).
3. More information should be available describing the services available to parents

The Momentum

The Minnesota Department of Education and other community agencies throughout Minnesota have initiated several major activities to improve transition services. Some of these efforts are listed below.

The Interagency Office on Transition Services completed the following activities.

1. In 1985-86, 11 regional transition awareness workshops were conducted for over 1000 participants.
2. The Minnesota Transition Training Manual providing information on community services and interagency planning was developed and distributed.
3. A state-wide needs assessment on transition services was conducted.
4. The development of a special education and vocational education policy, and procedural manual for planning vocational education options for secondary handicapped students was initiated.
5. On-site consultation and assistance to the 11 educational service units around the state was provided.

State cooperation continued to grow as evidenced by the following actions.

1. The State Transition Interagency Committee, comprised of 11 state agencies and parents, developed and signed a collaborative interagency agreement.
2. Over the next few years, ongoing state-wide planning and technical assistance will be provided to create an equitable state-wide system of community-based transition services.
3. Policies, standards, practices, and funding mechanisms essential for improving transition services will be developed.
4. Other developments include:
   a) a five-year, federally funded Supported Employment Project;
   b) transition grants awarded to local districts and parent advocacy groups;
   c) numerous related activities on training and research; and
   d) technical assistance by the University Affiliated Program on Developmental Disabilities at the University of Minnesota.
5. The Vocational Rehabilitation Agency, through a "change team" and with substantial assistance from the Interagency Office of Transition Services and parent advocates, provided transition training to all service delivery and supervisory staff.

The Future

Improving the effectiveness of efforts to prepare students and plan for their transition is essential to ensure quality futures for all youth with disabilities. Carefully guided action by special education and community service agencies is essential to assure that youth with disabilities have available to them the same opportunities for employment, postsecondary education, and community living as all other citizens The following recommendations center around the needs that focus on planning for individuals, transition and families, community planning and interagency cooperation, and statewide planning.

Planning for Individuals:

1. Formal cooperative planning must be developed between schools, families, community service providers, and students Planning for post-school services and life experiences should begin early in a student's educational program

2. Schools are now required formally to develop transition goals and objectives as part of each student's individualized educational program beginning by, at least, the 9th grade, or age equivalent. The next steps include the implementation of this legislation, disseminating the information, and providing local technical assistance to improve overall program quality

3. Continued and increased technical assistance should be provided to regional and local areas throughout the state to ensure systematic and comprehensive planning for transition. The Minnesota Department of Education is conducting approximately six training workshops for interagency teams in 1987 and 1988, with additional technical assistance efforts provided by the State Transition Interagency Committee

4 Current instructional practices, curricula, and assessment methods must be practical and be applied to everyday living situations. Stronger connections between elementary and secondary education programs should be established to ensure that students receive appropriate educational programming throughout their school years.

5 Instructional programs should use community resources and settings to enhance student learning

6. In all areas of planning and programming, opportunities for integration with nonhandicapped peers should be emphasized.

Transition and Families:

1. School and community agencies must take specific actions to ensure the full participation of parents in all phases of educational decision-making and planning.
2. Parents' expectations must be raised so they have a vision of successful transition planning and implementation
3. Services must become more consumer driven, with the independent living movement in the lead
4. Parents must be made aware of essential information on community service options, service eligibility requirements, rights-to-service, and other information for effective decision-making and planning for transition.
5. Student participation and planning for post-school options and services must be more fully addressed. Students must face the challenges of adulthood as informed consumers and have access to information resources on the appropriateness and availability of community services

Community Planning and Interagency Cooperation:

1. Local agency agreements and cooperative actions must be taken to ensure more effective services for handicapped youth. The initiative for increasing local interagency collaboration has been established at the state level through the written interagency agreement between various state offices and community service agencies. Formalizing efforts to continue to establish local interagency agreements must continue
2. The development of state-wide community interagency planning teams is now required. This newly legislated amendment strengthens the state and local efforts to improve communication and service planning between school and community agency planners.
3. Improved information resources on students is critically needed. Information is needed on the numbers of students leaving special education programs and the types of services they will require following high school.
4. Methods should be developed for collecting and sharing information on state-wide community service availability

State-Wide Planning:

1 Continued efforts to strengthen Minnesota interagency cooperation are critical. Schools, community service agencies, families, employers, and the public must all take an active role in improving services for adults with disabilities.

2. The State Transition Interagency Committee (STIC) must expand its membership to include representatives from medical and health fields as well as from the business community. Through the STIC committee, efforts must continue to disseminate the state interagency agreement, amend or develop new policies which enhance agency service coordination, and provide technical assistance to service providers. Small task-forces are proposed to address interagency issues through field input and make recommendations to STIC.

3. Local and state education agencies must report, as part of their annual child count, the anticipated service needs of handicapped youth leaving schools. The importance of securing accurate information on both handicapped students and service availability was emphasized in recent amendments to US Public Law 94-142, as amended by US Public Law 99-457 (The Education for All Handicapped Children Act, 1975 & 1983).

4. Future service providers need to be trained on the most up-to-date curricula and assessment methods that emphasize life skills, community-based instruction, and community resources regarding transition. To improve the process of transition, preservice and in-service training for present and future service providers must reflect current information and strategies.

5 A state-wide effort should be developed to increase public awareness on work and living options for persons with disabilities.

In summary, concerted efforts should be undertaken to provide effective transition services. The transition from school to post-secondary education, training, employment, and community living requires a) sound and effective planning for individuals, b) support and assistance to students and families prior to the time of leaving school, c) comprehensive community planning and interagency cooperation, and d) state-wide planning that supports the development of cooperative partnerships at the local community level. The issue of reforming services requires the joint efforts of families, the legislature, schools, adult service agencies, employers, and citizens. The momentum must continue in the years ahead to improve the transition of students from public schools to an array of adult services The continued support of parents, service

providers, and the community is required to improve the quality of life for persons with disabilities.

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On Campus: Integrating the University Environment

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Abstract

This chapter describes the On Campus Program at the University of Alberta. This program serves 11 students with moderate to severe handicaps in a university setting. Students have Individual Integration Plans which identify and organize a set of university-based activities appropriate to the needs, interests, and strengths of each student. Activities include classes, recreational activities, and social interactions.

This chapter describes a daring innovation in providing a postsecondary education to people with mental handicaps through integration within a university context. On Campus represents the culmination of many years of effort by parents and advocates to open the doors to a brighter and more promising future. For many people, meaningful university education for persons with a mental handicap, regardless of the severity of the disability, is difficult to visualize or accept. However, the On Campus program at the University of Alberta demonstrates that individuals with moderate and even very severe handicaps can benefit from training in the university environment. Equally important, the program demonstrates that these individuals can make an important contribution to the university. To understand how On Campus came to be, the current status of the program, and the promises it holds, it is important to review the thinking which led to its development.

The Current Reality

The vast majority of students with severe handicaps finish school with few dreams and career aspirations. This reality applies regardless of the educational setting—a segregated school, segregated class, or partially integrated environment. There are a variety of reasons for this state of affairs. One of the reasons is the typical service model available to young adults with disabilities when they complete their schooling. This

service model is largely composed of activity centers and workshops and is characterized by a number of elements which are problematic

These services typically congregate large numbers of people with similar disabilities and diagnostic labels in segregated and artificial environments where they practice skills which may have little or no use in the real world of work. People are maintained in a perpetual state of poverty and preparation for something better that never comes. The longer the stay in these restrictive settings, the greater the negative effects on the individual. No one needs years of schooling to enter this service system. What the adult service system does, as it currently exists, is to negate the promise and purpose of school. The purpose of public education for all children is to prepare them for adult roles in our society. Where no appropriate role is available to students emerging from our schools, this purpose cannot be realized. Knowing the depressing outcome beforehand robs students, parents, and teachers of dreams and possibilities.

A number of significant effects take their toll. Personal self-esteem is necessary for success in life. The cumulative effects of the negative experiences previously described result in an inevitable lowering of self-esteem. This minimizes the potential for positive growth and development. Who we are as human beings is often derived from the experiences we have throughout life. These experiences constitute much of our memories and our knowledge. The limited life experiences so common to persons with a mental handicap constitute a threat to their human vitality. Worthy of final mention is the issue of friendship. We are only beginning to understand the value and importance of friendships. The stark reality for many people with mental handicaps is that valued friendships are few and far between. Friendships are difficult to achieve through segregation and limiting opportunities

Lessons Learned

In attempting to address the issue of more appropriate adult education, it made sense to revise what we have learned from historical parallels. For example, the areas of community living and education have had similar histories. The parallels include a long and active struggle, progression from segregation to integration, from privilege to right, and from persons with a mild handicap to those with a severe disability. While the struggle still continues, a number of critical points have become clear.

These points include the necessity of avoiding artificial environments. These enviroments typically constitute segregated settings through which persons with handicaps are required to move with the rarely realized expectation that one day they will have made it to the real world. What we now know is that growth and change take place

within the individual as opposed to an artificial service continuum Further, participation and presence in the valued world is a condition of support, preparation is not. The eternal training program that rarely or never culminates in more meaningful participation in our society is clearly an unacceptable solution A related dilemma is reflected in our ability to correct our mistakes. Having created an unresponsive and debilitating service system, we now require tremendous energy and dedication to produce positive change.

We have learned that persons with a mental handicap have essentially the same needs as any other individual. The best way to meet those needs is through the same means as is used to meet all our needs. This necessitates supported integration within generic environments. This principle is illustrated by the following examples. Many adults have a need to continue their education through a variety of means, including university education Another need is to have a wide variety of life-enriching experiences; for some people, university education provides some of these needed experiences Everyone has the need for self-esteem; for some people, attendance at a university helps meet this need. Everyone has a need for a wide circle of friends who help to provide us with our self-identity, support us when the going gets tough, fulfill our need to be needed, share life with us, and care for us. A university is one place where the possibilities of forming life-long friendships exists.

Traditionally, new programs have engaged in a process termed streaming, based on the assumption that the program had to first demonstrate its viability The most common results were that persons with a severe disability and perhaps the greater need were least likely to ever receive service. The principle employed by On Campus holds that, to be a viable educational program it must serve all persons with a continuing education need, irrespective of the severity of disability. With a focus on ability, disability is far less an issue

Cautions

In an effort to address some of the problems noted earlier, a number of new initiatives have been developed. However, it is our opinion that these new approaches have seriously limiting factors. These factors need to be identified and considered in the light of preceding historical lessons.

1. *Specialized transitional services* Due to the failure of special education to lead to successful community employment and integration, new service structures are being developed. Unfortunately, this fix results in the development of new services exclusively for persons with a disability. If the above principles were to be applied there would be a recognition that transition at various points in

time is an issue for all of us. In turn, the best way to facilitate transition is through the same means of support that most of us require. There are a variety of generic services and natural means by which most people successfully complete a transition in life. The development of separate and artificial services has not worked before; it is unlikely to work now.

2. *Work is all that matters philosophy.* There is an overly narrow view that the only option for adults leaving school is to work. This is certainly one possibility, but there is more to life than work alone. It is interesting that during the last several decades, the central role of work in the lives of people without disabilities has diminished. Working hours have become shorter and other life options more acceptable. For people with handicaps, however, work continues to be seen as the sole and total reason for being, even when their true economic contribution is small. Continuing education provides another viable alternative for many people in our society and should be available to adults with mental handicaps. After all, learning is a life-long occupation In addition, there are many life experiences integral to our well-being. Postsecondary education is one means by which to address this consideration.

3 *Community intensive segregation.* This is another strategy to offset the failure of the traditional special education system. This approach promotes the training of students with a mental handicap in community environments outside of school. This means that students are taken out of the school environment to go shopping or to bus tables, usually at times when their nonhandicapped peers are in school. For some reason, special educators have failed to realize that schools are valued community environments and that the best preparation for integrated community living is integrated schooling. Perhaps the loss of social interaction opportunity that results from removing these students from the schools and their age peers goes unnoticed because the school program has failed to provide any meaningful integration. This should be rectified by better integration within school programs, however, not by further physical isolation that results from removing students from the schools.

There are many natural ways to support a developing career orientation for students with a mental handicap There is a role for work experience and part-time employment, but on the same basis as these occur for nonhandicapped peers

Post-Secondary Education

On the basis of this analysis, a group of parents and advocates have been working for a number of years to obtain integrated postsecondary educational opportunities within generic settings. Adults typically have a vast array of continuing educational options that are largely taken for granted. A quick glance at a college or university calendar or a continuing education supplement provides evidence of the variety available. In contrast with the options available to adults with mental handicaps, these options illustrate the broad spectrum of human developmental needs. The dream is to some day have the same vast array of choices available to all. The following list identifies the positive assumptions that underlie the necessity for the development of integrated postsecondary education choices:

1. Generic setting.
2. Broad based perspective of human needs.
3. Integrated activities
4. Possibilities for multiplicity of relationships.
5. Philosophy of life-long learning
6. Socially-valued continuing education.
7. Wide variety of life-enriching experiences
8. Enhanced self-esteem.
9. Natural and functional environments used in integrated contexts at normative times
10. Improved employment possibilities
11. Normative and challenging expectations
12. Wide range of options.
13. Opportunities for making a valued contribution
14. Opportunities for numerous associations and connections

These valued components, typically available in normative postsecondary settings, led to the development of On Campus.

Why a University?

A university setting was chosen for the following reasons:

1. *Social role valorization.* The role of a university student is highly valued in our culture. It provides for significant personal competence and social image enhancement.

2. *Change agentry.* A university holds such a valued and respected academic position in our society, it is virtually impossible for anyone to say that an On Campus student is not ready for valued community life. If a person with a severe disability can succeed at university, which doors in our society can remain closed?

3. *Possibilities.* A university is very much like a small, or in some instances, large community. It provides a vast array of resources, activities, associations, learning opportunities, and peers.

4. *Consistent with the role of a university.* Universities often provide many community support services in addition to traditional academic instruction.

On Campus

On Campus began with eight students in February 1987 at the University of Alberta. It is funded by Edmonton Regional Office of Alberta Social Services. It is operated under the auspices of the Gateway Association for the Mentally Handicapped and is affiliated with the Developmental Disabilities Center at the University. The students come from a variety of backgrounds. Some have been in segregated schools or classrooms with the label moderately to severely handicapped, while others have been institutionalized most of their life with little or no education and multiple disabilities. On Campus has a zero exclusion policy and deliberately opened its doors to include persons who have typically been excluded from community services.

On Campus has a number of major goals:

1. *Fostering and nurturing relationships.* On Campus places its highest priority on friendships. Friendships cannot be artificially created, but the opportunities for friendships can be built and supported. Eleven students in a community of over 20,000 peers provide the opportunities for all kinds of common interests and activities. The facilitation of natural support networks holds the promise for an interesting life after university hours

2. *Participation in university life.* On Campus considers valued experiences to be a vital ingredient to personal growth and development, ranging from attending classes to hanging out, a particularly necessary university skill.

3. *Integration facilitation.* On Campus staff function as integration facilitators as well as providing needed instruction. Volunteers function as peer tutors in a variety of subject areas depending on student interests.

4. *Employment.* After four to six years of university education, students will be employed either on or off campus The university and surrounding neighborhood contain many potential jobs, including part-time and summer jobs which contribute to references and a resume.

5. *Skill development.* Students will be assisted in the continued development of their personal competencies both on and off campus.

6. *Individualization.* There is no set curriculum. The curriculum is established for each individual student according to his or her needs.

7. *Evaluation.* On Campus has an external evaluation process as part of its operation.

Program Notes

The 11 individuals attending the University of Alberta recently graduated from either Edmonton Public or Edmonton Separate School at age twenty Like many of their fellow graduates, they chose postsecondary education at the University of Alberta as their next life option to continue their education. Because the program does not require homogeneity of its students (rather it is designed for diversity), students do not come from a single diagnostic or categorical grouping. A wide range of handicapping conditions exist among these students; some would be considered severely disabled and unable to gain admission to many sheltered workshops or similar less integrated adult placements because they lack prerequisite self-care or communication skills.

The program goal is to provide high quality postsecondary education appropriate to the needs of each student in an image-enhancing environment. The students attend a wide variety . classes, take part in recreational activities, join University of Alberta clubs, and "just hang out" with fellow students. We see evidence of the development of long lasting relationships between On Campus students and others at the university. These relationships develop spontaneously and provide mutual benefit to all involved, not one-way benefits in return for pay.

Many other university students work with On Campus students in addition to paid program staff. Some teach (e.g., reading, computers, drama), others are involved in recreational programs or social activities. Some students at the university attend classes with On Campus students and facilitate their involvement in class activities. Through these contacts, On Campus students are meeting others and developing social networks.

Although On Campus is autonomously funded, the University of Alberta has cooperated in many ways. It is a large community with a

wealth of opportunities and facilities to develop students' interests and needs. Some skills taught to students will have specific vocational application in the future, but the primary goals of the program are related to social adjustment and skills. This reflects a recognition of research support for the importance of these skills in ultimate vocational adjustment as well as a philosophical commitment to meeting the needs of the whole person.

An Individual Integration Plan (IIP) process is used to determine aspirations, strengths, needs, and interests. This high degree of individualization makes description of the program difficult because the goals and activities vary greatly.

Parents, students, staff, and others involved share the students' perception that the program is meeting their needs. Although not all students in the On Campus program can express themselves, these comments from two help to communicate how they experience the program:

> I go to the University of Alberta campus and I used to go to another school I like it at the U of A in comparison to the other school because the U of A is bigger and has lots of buildings I meet lots of other people at the U of A and have coffee and lunch. I also work with a person in the weight room and stretch in the pavilion. In the locker room one time I met someone who has the same interests as I do—running Recently I have lots of friends here who I have lunch with and go to classes with

> I like the university because I do many things I socialize with friends I go to the library I swim with a friend I'm learning to read with a peer volunteer and I go to music class I'm also learning things like money skills and banking Most of all I want to make new friends

Conclusion

This presentation describes the beginning of a new, integrated, postsecondary educational option at the university level. We have tried to present the thinking that led to the formulation of On Campus. After just a couple of months, this beginning has been very positive. Maybe some dreams do come true.

Alternatives in Community Living and Functional Education: Parents Speak Out[1]

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Abstract

The chapter is an attempt to convey some of the concerns, dreams, and concrete suggestions of parents on the subjects of alternative living arrangements after the family home and functional education alternatives for their moderately to severely handicapped children.

There has been considerable support in the literature for involving parents in the educational planning for their handicapped children (Brolin & Kokaska, 1979) and for enlisting parent support and cooperation for effective delivery of vocational and community living services (Wehman, 1981). In the spirit of implementing parent participation, two parent panel discussions were presented in Edmonton at the Severe and Multiple Handicaps: Alternative Futures Conference. They were titled: "After the Family Home: What Alternatives?" and "Functional Education: What Alternatives?" Parent panelists were selected for their range of experiences related to their handicapped children and representing a number of different perspectives as well as a broad age range for the respective children.

This chapter makes no attempt to summarize, in any detail, the parent presentations and discussion. Rather, the purpose is to communicate some of the issues and concerns as well as solutions suggested by the parent panelists, who were asked to tell their "stories" and to express their hopes and dreams for the future of their handicapped children.

The "after the family home" panel consisted of parents of multiple-dependent handicapped children ranging in age from almost 2 to 32. A clear trend has been apparent in services and support for the handicapped, in that the younger children have been living in their family homes, whereas the older ones, for whom there were few community support systems available in their younger years, were placed in institutional care because families were unable to cope with the special needs of the handicapped child as well as sibling and family needs. In addition, educational options are currently greater, from early in-home support and therapy to full in-school integration, compared to leaving "education" up to what unsupported and undirected parents were able to manage on their own in years passed. Thus the nature of the parents'

hopes and dreams has varied with the age and prior experiences of their handicapped children, and for parents of a young, severely handicapped child today, future prospects seem somewhat more optimistic than was the case 25 to 30 years ago. In the parenting time period spanned by the first panel, location of information and resources has been a consistent problem for parents. Thirty years ago little information and few resources beyond institutional care were available. Today, parents still find that they need to locate much information on their own (e.g., the possibility of obtaining in-home care with support staff is not well-publicized). This poses serious problems in that parents may not be able to find information without professional direction, especially in the early stages of adjusting to their child's disability. At that time, they may be so overwhelmed by daily living tasks and problems as to avoid the fact that their child has a future.

However, the parents emphasized the need to have a clear vision that the child does, indeed, have a future In planning that future, they expressed a need for coordinated services and volunteers; an understanding, supportive, and tolerant attitude by medical practitioners; and for parent support groups who maintain a "political," advocacy presence and provide personal support to other parents in their decision-making.

From society, there must be a commitment to the right of handicapped children to an education with their nonhandicapped peers to allow them to develop to the extent of their *abilities*. Parents need to be assured that such options are and will be available.

As for independent living options, parents were in agreement that currently relatively few adult living options appear to be available, other than some type of "institution" or group home with other handicapped adults where staff members make all decisions for the residents. The parents envisioned their children having their own "homes," perhaps shared with a nonhandicapped roommate who might provide required assistance in exchange for room and board. Emphasis was placed on allowing handicapped adults the greatest possible degree of independence and on the importance of allowing *choices* both in general living arrangements as well as in specific details of daily life (e.g., meals, leisure activities, and bedtime). Parents would monitor the arrangement to ensure the adult needs of their children were being met. However, the primary responsibility for guaranteeing choices and options would rest with "compassionate future generations" who have been educated with their handicapped peers and who recognize that we must value all people equally and recognize individual differences.

Parents do not want the *primary* caretaking responsibility when their child reaches adulthood and as the parents grow older. They do not want to become so monopolized by planning and advocacy requirements

as to give up time they would rather spend with their handicapped son or daughter.

Audience response and input to parent views and concerns showed support for the need of parents to give direction to service providers. It also emphasized that *society* must provide options; that parents should not have to choose between advocacy and spending time with their child; that service providers should be the advocates; and that there is a need for an "institute for independent living" to serve a monitoring role on parents' behalf when they are no longer able to do so.

The "functional education" panel consisted of parents of mildly to severely handicapped individuals, ranging from 8 to 21 years of age. Their children's educational experiences have ranged from early intervention in home and integrated or segregated school programs, to private education prior to availability of public school options, to segregated school and classroom, and finally to fully-integrated programs.

"Integration" meant different things for individual parents, who have had mixed experiences with a variety of educational alternatives and who have been forced to make compromises in seeking the best options for their children Up until the realization in the mid-1970s of the children's right to a public education, and in the actualization of that possibility, parents have had to take a strong stand as advocates for their children.

Parents indicated that the ideal would be attendance at the neighborhood or local school so that friendships could extend beyond the school context The best programs in terms of academic and non-academic gains have been programs taught by teachers with special education training, with skills in assessing and programming for individual needs, and with reasonably high expectations of the children. Programs which have involved integration with nonhandicapped peers have resulted in marked gains in language and social skills. While parents emphasized the importance of interaction with nonhandicapped peers, one parent expressed some concern that her child seemed to be learning to be quiet, rather than to express himself in any way he is able to in an integrated setting

All of the parents wanted their children to learn as much as they were capable of in an individualized program, including adequate independent living, social, and vocational skills to work in the "real world" and to make normal human choices in life. The programs should meet the children's needs rather than force them to "fit in." Programs must continue into the post-secondary years.

Parents wanted teachers to have special education training so that they would be prepared to assess individual needs and individualize

programs. They wanted teachers to consider them as partners in the educational experience of their handicapped children and to provide support for them in advocating for and developing more flexible and adaptable educational options for handicapped children.

Audience response was strongly supportive of the need to discard labels for children and to individualize programs according to each child's needs. There was recognition that parents must continue to seek the best possible alternatives, in partnership with educators, and that the education system must allow for alternatives and choices. There was acknowledgement that some progress has been made in education but that parents will have to continue to work hard to gain the alternatives they seek for their children; however, there *were* some administrators willing to accept the challenges "real" integration presented to them and to the school.

The conclusion that is apparent from the parent panel input is that parents have, indeed, been actively and effectively involved in obtaining educational and independent living options for their handicapped children and that a parent-educator-social services partnership can be most powerful in increasing the number and variety of educational and independent living options available for handicapped individuals as "equal" members of society.

Note

1. The writer expresses her gratitude to the parents; the visions are theirs The writer also thanks Sandra Chomicki, who co-chaired this panel with her and contributed in many other ways.

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Better Ways to Build Educational Routines

Part 1: Routines: Understanding Their Power

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Abstract

The paper is presented in two separately authored parts. Part I outlines the importance of routines as an intrinsic part of the teaching process, and reviews the potential benefits to the student of routine based teaching. Part II provides a concrete example of the utility of routine-based teaching for students with severe handicaps.

All educational settings have a necessary, underlying organizational structure. This structure expresses itself in predictable events or routines which occur, in order, day by day. These routines, good and bad, are an intrinsic part of the teaching process. Recently, educators of learners with severe handicaps have been trying to use routines more effectively in the classroom (Brown, Evans, Weed, & Owen, 1987; Donnelan & Neel, 1986). Furthermore, curricula and strategies are currently being developed to assist educators in being better able to plan for the inclusion of routines within their educational settings (Frans, 1987). Education, in general, should be aware of this emerging technology since information from other cognitive sciences suggests that routines and the process of routinization are a fundamental and necessary human activity associated with learning. What follows is our summary and integration of the ideas and concepts that account for the success of routine-based programming.

The more competent the learner, the faster the underlying classroom routines are mastered and the faster the student can turn his/her attention and effort to the learning tasks the teacher wishes to present. In classrooms where learners may be encountering difficulty learning the basic routines, however, teachers can have a greater problem In this situation, teachers may feel that they don't have enough "quality" teaching time; they have to spend too much time just moving the students through the day. Routine-based programming allows teachers to integrate learning of the classroom routines with other instructional objectives, improving the quality of teaching time, and student internalizing of daily structures and routines.

Routines facilitate attending. From the work of researchers in the field of information processing (Kahneman, 1973; Norman & Bobrow,

1975), we know that routines facilitate easy, efficient use of attentional and physical resources. Repeated practice (routinization) of activity facilitates the use of fewer attentional/physical resources to do that activity, as the activity becomes more automatic. Therefore, the attentional resources and effort can be applied to other, more complex, learning. A second and important benefit of routinized activities is that the attentional patterns associated with routines are often calming and regulating, highly valued in a classroom.

Routines facilitate natural cues. As some educators of learners with special needs are pointing out (Carreiro, Frans, Hinves, & Townsend, 1987; Donnelan & Neel, 1986), daily routines are effective because the cues to initiate behavior can be embedded in the activity itself. For example, the cue for putting coats away becomes a locker or coat hook. *In a natural routine, one step acts as a cue for the next step.* Objects stand as excellent cues for functional action. It should also be noted that this type of cueing is nonlinguistic and therefore does not depend on a person (teacher) to be maintained. Therefore, routinization provides a significant degree of independence for these learners.

Finally, routines develop in a learner the expectation not only of "action starting," but also of "action ending." Routines themselves become cues for maintenance of attention for the duration of the routine and for task completion (i.e., following the whole routine through to its natural end).

Routines as a foundation of memory. Another interesting perspective on routines is obtained by examining the recent work of Tulving (1985) on memory. The development of sophisticated memory is dependent on a core memory system; that is, procedural memory, the ability to retain a simple everyday "low attentional" understanding of how things work. From our perspective, we note that routine mastery will help to develop concepts of how things work (procedural memory), and thus enable organizing and remembering information efficiently.

Routines as tools for concept building. Routines are basic building blocks of concepts. Piaget, for example, emphasized the importance of having internalized an activity so that a learner knows when a change occurs that needs to be attended to and learned (Lerner, 1976). The Piagetian concepts of assimilation and accommodation can be viewed as responses to prior learned routines. We have found that, in developing notions of time and space, a learner must have a sense of routine to provide the foundations for the learning of sequence, position, and organizational concepts

Routines can ensure functional competency. Routines which are based on natural and common human activities (e.g., washing, shopping, cooking) provide two powerful program options to teachers First,

teachers can incorporate a number of goals for a number of learners into each routine. The routine will meet the need for always ensuring that a context is provided on a repeated basis for any social, cognitive, or academic goal. Individual goals in individualized skill areas can be developed for each learner. Beyond this, however, routines can provide a teacher with a sense of developing competency across a whole, functional task. Mastery of the skill sequences themselves greatly enhances the student's long term ability to be successful in the community by developing skills in the contexts where they are needed.

Routines ensure basic learning competency. Routine programming is sufficiently flexible to meet a large variety of teacher and student needs. For those learners considered the most difficult to teach (i.e., those having difficulties attending to a range of environmental stimulation, e.g., those learners who interact with the world in violent and self-abusive ways) routines provide a means whereby teachers can identify small units of competency and build on them. Preferred objects and events that are calming or interesting to the learner can be expanded systematically within the context of routines to increase the overall competency of the learner. Routines can thus be completely specialized to meet the object and action needs of each learner.

Both specialized and functional routines can be used to teach learners other basic learning competencies as well. Learners at any level of development need to be flexible and to be able to solve problems. We can do this via routines by altering the form (objects used), place the routine is executed or the purpose of the routine. We can also deliberately sabotage routines to create opportunities for learners to recognize what is wrong and search for solutions or help.

Routines, therefore, are a powerful and complex tool available to teachers. They provide a means whereby teachers can achieve the many goals set for themselves and their students. These include the establishment of a classroom setting which optimizes the amount of teaching time available to it; the development of theoretically and practically sound teaching practices; the enhancement of individual learning competency; and the development of long term skill competencies to facilitate student independence and community integration.

Part II: Implementing a Program of Routine-Based Instruction for Students with Severe Handicaps.

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Abstract

Part II of the paper provides a practical method of implementing a program of learning in which routines are the basis of all instruction. Elements present in an effective classroom are reviewed and the steps necessary to achieve an effective classroom when using the routine-based model in educating students with severe and multiple handicaps.

The routine-based model is a method of teaching curriculum goals within the context of routines. Functional routines are preferred as they have meaning for the student and serve some useful purpose (Brown, et al., 1979). An example of a functional routine would be the student's arrival at school with its related activities. The "grasping" objective can be taught during an arrival routine where the student is to place his/her lunch box in a given spot. In this same routine, naming or identifying body parts can also be practiced while a student is removing his/her outer clothing.

Elements of an Effective Routine-Based Classroom

Whatever style of teaching is adopted for the special needs student, the classroom environment must display certain properties conducive to learning and teaching. These include the structure of the classroom as well as the content of the material taught. There must be a structure that allows for maximum productive time for a student as well as the most efficient use of staff time. The content must be appropriate and meaningful to the age and mental functioning of the student, and must be taught in appropriate places at suitable times (Brown et al., 1979). Furthermore, to ensure optimal learning, suitable teaching strategies must be employed Finally, there also needs to be a system of accurate data keeping to make certain that the set objectives are actually being taught and to enable the measurement of student progress (Smith & Snell, 1978).

With these basic principles in mind, we next focus on the steps involved in creating the model.

Creating the Routine Model

1. *Choosing activities.* With the routine-based model, the first step is to decide what activities to use. Begin by looking at the obvious ones, such as arrival in the morning, going to the bathroom, eating,

and leaving for home. Then look at those that would be beneficial to mental and physical health such as morning exercises, grooming, and gross motor and recreational activities. Next look at things that adults usually do for the students, such as cleaning laundry, preparing lunches, and sweeping up after lunch. Look around and see what other jobs can be done by the student as a vocational activity. This might include food preparation or delivering mail.

2. *Setting up a daily schedule.* Set up a basic schedule using the activities you identify Selecting appropriate places and times, fill the complete school day as in the following example used in a class of students with severe and multiple handicaps: 9:30—arrival, bathroom, and leisure; 10:00—morning exercises; 10:15—snack; 10:30—cook item for lunch, heat individual lunches; 11:10—bathroom and organized leisure; 11:30—lunch; 12:30—bathroom and grooming; 1:00—story or poetry reading; 1:15—physical education and therapy; 2:00—departure activities.

   When using the routine model for teaching all curriculum skills, the actual activity will normally take somewhat longer For example, when the naming of body parts is an objective while outer wear is being removed during the arrival routine, more time will be required for the routine. As a result, the daily schedule is somewhat relaxed but a great many skills are taught in a way that is not stressful to the student.

3. *Grouping students.* With a basic schedule in place, the students should be grouped in such a way that they will be able to work together effectively. The number and size of groups are directly related to the number of students in the class and available staff. It is suggested that groups be made up of students with mixed abilities. For instance, it is wise to have an ambulatory student with a student in a wheelchair. This gives the ambulatory student the opportunity to help push the wheelchair and thus learn another skill. It also results in a more cooperative effort in carrying out the routine than the situation where the students are equally physically able.

4. *Scheduling the groups.* Once a basic schedule has been developed and the groups have been determined, it is necessary to fit the groups into a schedule. Many routine tasks will be done simultaneously by all groups and some, such as cooking or making lunches, will be done by only one group at a time. Since it is important to keep the activities appropriate to time and place, cooking and making lunches will be done by only one group per day, with other groups doing different activities at that time.

5 *Writing routines* When activities are identified and the groups organized, the class can begin However, in order to make activities structured and easy to learn, they need to be written into basic routines as soon as possible. These will become the vehicles for teaching the objectives chosen for each student. To write a routine, list all the elements of the activity in the order that they will be performed. At this stage, the routines will be written simply, with just enough detail to ensure that the activities will be done in the same way every time. Later, each routine will be adapted to the needs of the individual student, as illustrated.

6. *Assessment and objective selection.* The objectives that will become part of the Individual Education Plan can now be determined. It is important to choose objectives appropriate to each student's developmental level An efficient method of choosing objectives is to use an assessment instrument, based on a developmental and functional curriculum Such a curriculum-based assessment will be broken into a number of areas such as communication, cognition, motor skills, and self-help skills By observation and testing, as well as by consultation with parents or guardians and appropriate professionals, suitable objectives can be chosen from each of these areas.

7. *Integrating objectives into routines.* With the routines written and objectives chosen for each student, the next step is to integrate the objectives into the routines. The routines should be carefully scrutinized to determine which of the objectives can most appropriately be inserted. In this way, each objective may be placed in several routines, giving ample opportunity for practice and enhancing generalization. For example, if a suitable objective for a student is to name objects, he/she can do this by naming items of outer clothing in the arrival routine, naming foods in the lunch preparation routine, and naming items used in the grooming routine.

8. *Choosing the teaching method for the objectives.* The objectives have now all been placed in the routines, resulting in individualized routines for each student. Now, an appropriate method of teaching each objective must be selected. The objective will determine the type of approach to take. For example, imitating simple body actions would likely be taught using prompt levels whereas drinking from a cup would probably be best taught using task analysis.

   The teaching steps for each objective can be placed under the objective in the routine so that the routine steps, the objective, and the teaching sequence for the objective are all conveniently together.

Arrival

	Date
The student will enter the class, put lunch in the appropriate place, remove outer wear and engage in a leisure activity	

Walk to the class room

Put lunch on trolley

Name objects Name clothing items being removed										
1 imitate word										
2 given first sound										
3 independently										

Take off hat

Take off coat

Take off boots

Point to clothing shown in large pictures (before item is placed in proper place) Use pictures of clothing being worn										
1.points to item with no distracters present										
2.points to item with 1 distracter picture present										
3. with 2 distracter pictures present										

Hang up coat

Hang up hat

Put boots on shelf

Put on shoes

Go to leisure area and get toy or book

Play appropriately with some toys										
1 given full physical assistance with a particular toy										
2 given partial physical assistance with same toy										
3 given model										
4 independently plays with the toy										
(Repeats with other toys)										

9. *Keeping data* Everything is now ready to use, and data keeping becomes the next issue. With the routines written, objectives and teaching sequences inserted, keeping data becomes simple. Make a grid beside the teaching sequences permitting successes and failures to be charted over time.

Before beginning, establish a baseline level in the skill to determine the step at which the student is to begin. Decide on criteria for moving ahead to the next step, such as two or three consecutive "corrects." Decide on the rate of taking data, based on the practicality of doing it every time the routine is done, keeping in mind the value of continuous data. An example of an individualized arrival routine prepared as a data sheet follows:

Carry out leisure activity

The class is now set up with objectives for each student, carried out during functional and appropriate activities, and a system for taking data is in place. The student should be on his/her way to making real progress which will be measured accurately and consistently.

To conclude, the paper provides a rationale for routine-based programming and has demonstrated its application with students having severe and multiple handicaps.

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Critical Factors in the Prescription of Technical Aids

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Abstract

A 52 point questionnaire was developed to evaluate the success of each of 270 device/client matches through the Technical Resource Centre in Calgary, Alberta. The first seven items described the age, cognitive and physical skills, and the number of hours of use per week. The next 38 points asked the evaluator (client, therapist, or family member) to respond on a scale from 1 to 5 to evaluate the device/client matches. The remaining items allowed more open-ended evaluations of devices. Findings are presented that identify the critical factors from the hypothesized list: effect on the user, effects on others in the environment, level of training in its operation, design of the device, and device reliability/durability. Suggestions are made to agencies and institutions that are considering the purchase of devices.

The Technical Resource Centre (TRC) is a non-profit agency supported by the United Way and the Cerebral Palsy Association of Calgary. Over 200 devices are available through TRC in the areas of communication, mobility, environmental control, and computer evaluation for the physically handicapped. Six individual services are offered at the TRC. (a) A therapist or client can access information through the library, which includes books, brochures, and journals on virtually every kind of technical aid available. (b) A therapist can consult with device specialists and therapists about a specific client's technical aid needs. (c) In the device assessment service, a client's physical and cognitive skills and personal goals can be matched to an assistive device. (d) The client and/or others can receive training in the use of a device. (e) The TRC provides monthly general orientations to the Centre, customized orientations, tours for specific groups, and a series of day long workshops in the areas of microswitches, computer applications, augmentative communication, aids to daily living, and environmental control. (f) As well, equipment can be loaned to clients after completion of an interview, consultation, or full client assessment if a trial evaluation is recommended by TRC staff.

The purpose of this paper is to analyze the results of loans made by TRC and to describe the significant or critical factors causing the success or failure of device/client matches.

Method

When TRC staff recommended the trial evaluation of a technical device, if available, the device was loaned in order to test its use in the "real" environment. The client and others in the environment were given basic training in the use of the device, an appropriate battery charging schedule and instructions, as well as suggestions to trainers for programming with the client in specific environments The loan period was usually four weeks.

At the end of the trial loan period, the equipment was returned and a Follow-up Evaluation Form[1] (see appendix) was completed, usually by the therapist (50%), less frequently by the client or a family member, to determine the appropriateness of the device/client match.

The first seven questions of the form (1 to 7) identified the device, the client, and estimates of degree of cognitive and physical ability.

The next 38 questions were grouped into six categories or hypothesized factors (Harris-Vanderheiden, 1975; Lynwood & Symington, 1978; Vanderheiden. 1981). Responses were made by circling 5 for a very positive answer, 1 for a very negative answer, and 3 for neutral or not applicable Factors and their related questions were durability and reliability (11, 13, 16); design of the aid (12, 14, 15, 17, 18); training and operation (8, 9, 10, 19, 20); decision to purchase (27, 28, 29); effects on others (22, 23, 25, 26, 42, 43, 44, 45); effects on the user (21, 24, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41). Items 46 and 47 related to the length of the loan period and any other aids used by the client. The last 5 questions (48, 49, 50, 51, 52) allowed for more open-ended responses. They gave the opportunity for the user and those in the environment to comment and make suggestions about the device in general or to more fully explain how it made or did not make a change in the user's life.

The numbered responses were averaged and the resulting score was considered an indication of the usefulness of the device recommended for that client. Analysis was done for 270 evaluations completed over four years, including 108 evaluations from an earlier study (Saya, 1985).

Results and Discussion

The following represent some of the most interesting and significant findings of the data analysis. The subjects were fairly equally divided between children (47%) and adults (53%) with a fairly even spread across age groups, from the infant and pre-school group (17%) to the geriatric group (16%).

For the sample, 83% of the group were physically handicapped and 6% demonstrated some motor delay. Over one third of the group (34%)

had cerebral palsy as the primary diagnosis. Neuromotor disorders such as Muscular Dystrophy, Multiple Sclerosis, and ALS (Amyotrophic Lateral Sclerosis) affected 21% of the group; spinal cord injury and closed head injury resulting in quadriplegia, paraplegia, or hemiplegia affected 24% of the group. Three percent of the subjects were physically and cognitively normal but had no functional speech. A final category (18%) included those children and adults with blindness, deafness, mental handicap, arthritis, amputation, and so forth. A full two thirds of the group had normal cognition. Parents, teachers, or therapists rated 33% of the group as cognitively delayed or as unknown [2]

Aids to communication (95) and aids to daily living (68) were the two largest groups of devices loaned and evaluated. Evaluations of computer equipment have been done separately and were not included in this study (Technical Resource Centre, 1986).

Other data gathered included the average total hours devices were reported used during the one month loan period. For communication devices, average total hours were 10.5; for aids to daily living, 16.9; adapted toys, 5.3; and aids to mobility, 26.6.

From this data, the following are suggested as required minimum hours of use before making a decision about the appropriateness of the device: 10 hours of use for communication aids; 17 hours of use for aids to daily living (e g., 17 meals on an eating device); 5 hours with adapted toys; 26 hours at least one hour every day for a month with aids to mobility (environmental controls).

If the overall evaluation score averaged around 4.0 for a device, there was a very strong suggestion that the device should be purchased or used on a long term basis. If the score averaged around 2.0, there were serious difficulties with and possibly a strong rejection of the device. This suggested a closer look at the situation and re-evaluation or modification of the use of the device. If the score averaged around 3.0, then the evaluation was inconclusive. This suggested that the evaluation period should be increased, that training might become more detailed, or that the device was not making any real difference to the client and others in the environment.

The average ratings for the technical aids over all raters give an indication of their overall usefulness to the subjects evaluated. To illustrate, the Form-A-Phrase communication device was rated a 2 (a relatively low rating); the Enco was rated a 4 (a relatively high rating) the page turners were rated 3 17 (which is not much above neutral). Table 1 provides ratings for a number of evaluated devices.

It is important to consider who is answering the evaluation questions and from what point of view. For example, a teacher may be answering from the point of view of the classroom only, where the device is seldom

Table 1
Rank Ordering of Devices with Respect to Frequency of Loan and Overall Rating of Devices

Frequency	Device	Rating
34	Sharp Memowriter	3.71
27	Toys and Switches	3.90
25	Aids to Eating	3.76
21	Phone Adaptations	3.90
16	Call Signals	3.75
14	Canon Communicators	3.57
14	Handivoices	3.21
12	Computer Peripherals	3.92
11	Zygo 16/100 Scanners	3.45
9	Rotary Scanners	3.44
9	Vocaids	3.55
7	Ultra IVs	3.71
6	Electric Carts	3.67
6	Page Turners	3.17
4	Enco	4.00
4	Express III	3.00
4	Light Beam Pointers	4.00
4	Message Selectors	3.50
4	Mouth/Head Sticks	3.00
4	Adult 3P Wheelchair	3.50
4	Voice Amplifiers	3.25
3	Able Tables	3.00
3	E-Tran Frames	3.67
3	Nolan Bath Chairs	4.00
3	Row Cars	3.67
2	VIP Communicator	3.50
2	Amigo Chairs	4.50
1	Form-A-Phrase	2.00

Note: The overall rating was calculated from the averages of each evaluation and is out of a maximum of 5.00. Not all devices are listed in this table.

used, but a staff person in residence or a parent at home may answer the questions very differently.

Responses to questions 21 and 28 differed significantly. For communication devices, the majority said that the device was suitable (45 Yes, 33 No). But if the respondents were asked, "Should the device be purchased?", then the majority said, "No" (28 Yes, 50 No). They were basing their "No" answer on the high cost of the device. This may be cost efficient, but one must question the fairness of the decision to the handicapped user. The same trends applied to all other categories of devices.

It should be noted that even after four weeks of evaluation many users or their guardians were unsure about a device. Clearly "one shot" assessments and prescriptions are to be avoided. Usually, problems arose because therapists, teachers, or parents over-estimated the client's skills or under-estimated the cognitive demands of the device.

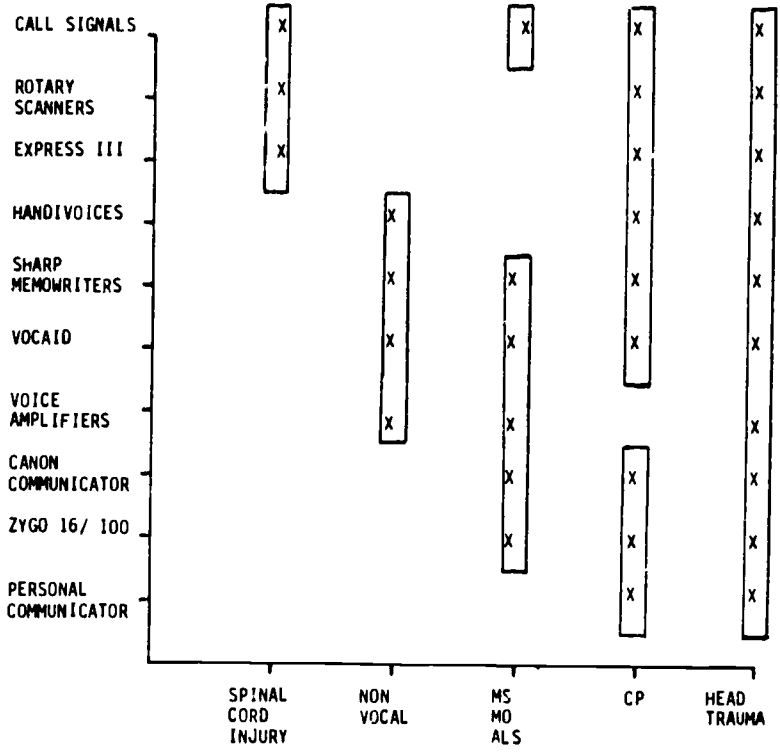

Figure 1: communication devices matched with appropriate physical disabilities

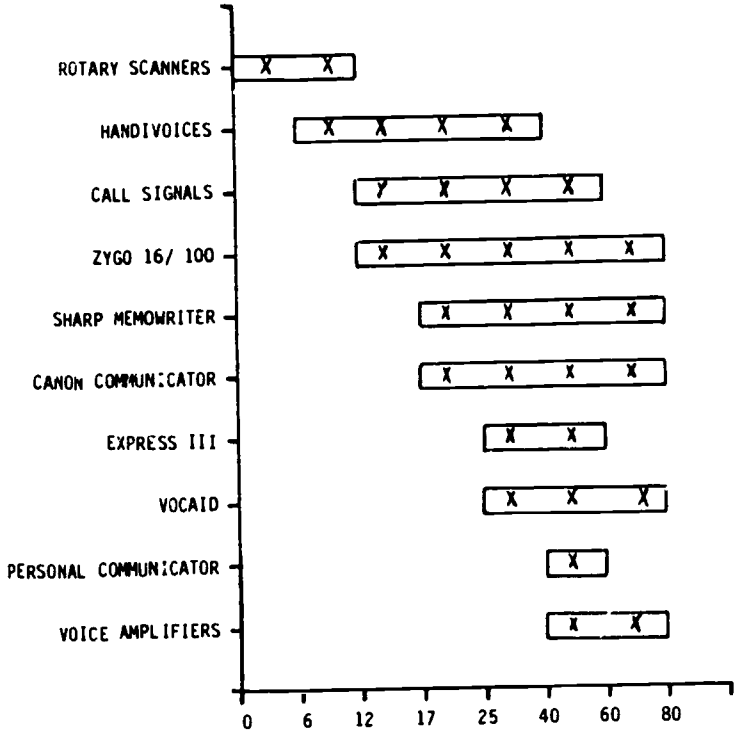

Figure 2: communication devices and age ranges representing 75% of users

The results of correlation studies (Saya, 1985) were that only two factors were significant: the effects on the user and the effects on others in the environment. This implies that even though the device was for the use of the client, the effects on others in the environment were equally important. In fact, with communication devices, what the listener thought of the device was apparently more important than what the client thought! Such considerations as durability, reliability, degree of training, design of the device, and so on; were not found to be significant factors. It is postulated that this is a result of two trends.

1. The Technical Resource Centre very carefully selects the devices available commercially (very few are made at the Centre). Therefore, those that are unreliable or poorly designed have been avoided.
2. There is an extensive and detailed assessment of the potential user and his environment. Thus the trial loan serves to prove that the

best possible match has been made or that there is a need for further information gathering and training.

For agencies or departments considering the purchase of technical aids for their programs, Figures 1 and 2 can be used to suggest the most appropriate selection of devices for specific populations by age or by diagnosis. For example, for those working with high spinal cord injury patients, the use of call signals, scanning devices, and the Express III (or the Light Talker) is warranted. Similarly, those populations in the age range 0 - 12 years would utilize the rotary scanners and Handivoices but few of the other communication aids listed.

Notes

1. The form was developed based on questionnaires from the following sources: Chedoke/McMaster Device Evaluation Centre, Hamilton; Assistive Device Centre, Sacramento; Bliss Communication Institute, Toronto; Kinsmen Centre, Vancouver; Project Threshold, Rancho Los Amigos; Project Teach, Memphis.
2. TRC is mandated to work with the physically handicapped. Those with mental handicaps but no physical handicap are given second priority and are, therefore, only a small part of this population.

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Appendix

1. Aid being evaluated:

001 Able table
002 Bliss scanner
003 BSR-X-10
004 Call signal
005 Canon Communicator
006 Computers
007 Computer peripherals
008 Dufco Matrix Communicator
009 Eating aids
010 Electric cart
011 Enco IV
012 E-tran frame
013 Form-a-phrase
014 Handivoice
015 Light beam indicator
016 Message Selector
017 Mouthsticks
018 Nolan bathchair
019 Optical stripprinter
020 Q.F.D. page turner
021 Rotary Scanner
022 Row car
023 Roll-o-bliss
024 Roto-table
025 Saltus reader
026 Sharp Memowriter
027 Si-comm
028 Switches
029 Telephone adaptations
030 TV controller
031 TV memory
032 Timer/counter
033 Toys
034 Ultra IV
035 VIC
036 VIP Communicator
037 Vocaid
038 Wheelchair - Amigo
039 Wheelchair - Child-3I
040 Wheelchair - Adult-3P
041 Wheelchair - TEM
042 Writing aids
043 Zygo scanner
044 Other

2. Client medical diagnosis

1. Amputation
2. Arthrogryposis
3. Arthritis
4. Cancer
5. Cerebral Palsy
6. Communication Impaired
7. Head Trauma
8. Hearing Impaired
9. Mental Handicap
10. Neuromuscular Disorder
11. Spina Bifida
12. Traumatic Cord Injury
13. Visual Impairment
14. Other

3. Client age

1. 0-6 years
2. 7-12 years
3. 13-17 years
4. 18-25 years
5. 26-40 years
6. 41-60 years
7. 61-80 years

4. Client physical skills: 1. Normal 2. Delayed 3. Abnormal

5. Client cognitive skills: 1. Normal 2. Delayed 3. Unknown

6. Client name:

7. Aid was used _____ hours/week

8. Setting the aid up was (difficult) 1 2 3 4 5 (easy)

9. Learning to use the aid was 1 2 3 4 5

10. Operating the aid was 1 2 3 4 5

11. Maintenance of the aid was		1	2	3	4	5	
12. Carrying the aid around was		1	2	3	4	5	
13. Did the aid perform reliably	(no)	1	2	3	4	5	(yes)
14. Is it durable and rugged?		1	2	3	4	5	
15. Does it look OK (size, color, shape)?		1	2	3	4	5	
16. Was it trouble free (no repairs)?		1	2	3	4	5	
17. Is the output OK (sounds, light, printing)?		1	2	3	4	5	
18. Is it flexible, modifiable, versatile?		1	2	3	4	5	
19. Was the TRC Instruction manual helpful?		1	2	3	4	5	
20. Was the manufacturer's manual helpful?		1	2	3	4	5	
21. Was the aid suitable for the user?		1	2	3	4	5	
22. Was the aid accepted by others (family, friends)		1	2	3	4	5	
23. Did the aid fit into the environment well?		1	2	3	4	5	
24. Did the aid meet the expectations of the user?		1	2	3	4	5	
25. Did the aid meet the expectations of the therapist?		1	2	3	4	5	
26. Did the aid meet the expectations of the caregivers?		1	2	3	4	5	
27. Was loan period enough?		1	2	3	4	5	
28. Should the aid be purchased?		1	2	3	4	5	
29. Is there funding available		1	2	3	4	5	
Did the aid improve the user's:	(no)			N/A			(yes)
30. Abilities at work?		1	2	3	4	5	
31. Ability to get a job?		1	2	3	4	5	
32. School work?		1	2	3	4	5	
33. Social life?		1	2	3	4	5	
34. Health?		1	2	3	4	5	
35. Attitude (motivation, self-image)		1	2	3	4	5	
36. Home independence?		1	2	3	4	5	
37. Routine at home?		1	2	3	4	5	

38. Mobility? 1 2 3 4 5
39. Speed? 1 2 3 4 5
40. Accuracy? 1 2 3 4 5
41. Communication 1 2 3 4 5
42. Did the aid improve the caregiver's duties? 1 2 3 4 5
43. Did the aid improve the caregiver's use of time? 1 2 3 4 5
44. Did the aid improve the family's social life? 1 2 3 4 5
45. Did the aid improve the family's health? 1 2 3 4 5
46. Loan period from _____ to _____
47. Other aids used: _____
48. Switch used _____
49. Aid was used in what room(s)? _____

_____

50. Client used the aid to interact with (what/whom)? _____

_____

_____

51. What is the best thing about using this device? _____

_____

_____

52. What is the worst thing about using this device? _____

_____

_____

The World of Work: Is There a Match Between Vocational Preparation and Employer Expectations?[1]

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Abstract

In the first part of the paper, research is described examining the extent to which there is a match between vocational preparation and employer expectations. The goal of the research is to identify generic and/or specific skills and behaviors for vocational training of individuals with disabilities. The second part of the paper addresses discrepancies between vocational training and actual job success and proposes additional and alternative strategies for ensuring greater success of workers with disabilities in the competitive workplace.

The first part of the paper addresses the issue of whether there is a match between vocational preparation and employer expectations for individuals with disabilities. The paper focuses particularly on research in Alberta. An implicit goal in research on the topic of vocational preparation and employer expectation is the notion that generic and/or specific skills and behaviors can be identified and then trained to produce workers who, although having disabilities, can be successful in competitive employment. The second part of the paper explores discrepancies between vocational training and occupational success. Alternative strategies essential to ensure successful employment are also reviewed.

Community integration through remunerative employment is widely targeted as the ultimate criterion of success in the vocational rehabilitation process. For many clients, however, this goal remains illusive because of individual factors such as lack of relevant skills and abilities, and environmental circumstances such as lack of job support networks.

A variety of community-relevant vocational and social survival skills have been identified as necessary for individuals to enter and remain in competitive employment (Rusch & Schutz,1979; Sowers, Thompson, & Connis, 1979; Wehman & Hill, 1980). Several authors have emphasized the importance of vocational skills such as speed (Moss, 1979) and productivity (DeFazio & Flexer, 1983). Krauss and MacEchron (1982) concluded that job placement of individuals with disabilities was related to (a) measures of job behavior and abilities, (b) workers' ability to meet the requirements of the job, and (c) employment reinforcements. In contrast, several studies have suggested that social skills are better predictors of occupational success than vocational skills (Carsrud, Carsrud, Dodd, Thompson, & Gray, 1981; Foss & Peterson, 1981; Gibson, 1967; Gruenhagen, 1982; Stewart, 1977; Wehman, Hill, Goodall, Cleveland, Brooke, & Pentecast, 1982). These authors stress the importance of personality, attitude, and motivation as factors for vocational success.

Support networks have also been identified as important predictors of vocational success. In a follow-up of sheltered workshop clients placed in competitive jobs, Brickey, Campbell, and Browning (1985) found that participants who were still employed after four to five years had parents who wanted them to work competitively. These parents had considerable influence over the clients.

Other outside factors which may significantly influence initial employment opportunities and employment tenure are employer attitudes toward persons with disabilities. In a survey of Alberta resource, manufacturing, and service employers (Gibson & Groeneweg, 1986), it was found that while approximately two-thirds of the employers initially expressed a general willingness to hire individuals with disabilities, when asked if they would currently be willing to receive inquiries from such individuals, the receptivity dropped to 39% of those initially willing. These statistics were calculated before the current high rate of unemployment. The situation for handicapped persons is probably worse now.

Another Alberta study, conducted by Evans, Dion, Morrissey, and Paul (1985), examined employer attitudes, behavioral expectations, and hiring practices as they related to employment of individuals with disabilities. Employers were asked to rate their likelihood of hiring employees with three types of disabilities. The results indicated that the

likelihood of hiring employees with physical disabilities was considerably higher than for individuals with learning disabilities followed by those with emotional difficulties. Most positive attitudes were toward employees with no disabilities.

Expectations of a typical employer for job readiness were compared with those of vocational rehabilitation staff. Analysis indicated that rehabilitation staff and employers agreed on most employee attributes. However, on six attributes there were significant differences, including number of unexcused absences, reporting late for work, leaving work unexcused, returning late from breaks, disturbing peers, and inappropriate dress. Vocational rehabilitation staff showed *less* tolerance of these attributes than employers did. Evans et al. speculated that given employers' negative attitudes toward hiring individuals with disabilities, the vocational rehabilitation staff's stringent expectations for behavior on the job were likely beneficial in promoting placement of such individuals into employment.

In recent years, a number of studies have been published reporting the results of employer surveys focusing on the issue of employment survival skills (Alper, 1985; Gruenhagen, 1982; McConaughy, Stowitschek, Salzberg, & Peatross, 1985; Rusch, Schutz, & Agran, 1982; Salzberg, Agran, Lignugaris/Kraft, 1986). These studies have resulted in a long list of behaviors deemed important for success in entry-level competitive employment. However, comparison of one survey with another soon reveals a definite lack of unanimity that may reflect both differences in the jobs surveyed (Salzberg et al., 1986) as well as regional differences in employer expectations and priorities (Alper, 1985). A thorough understanding of employment survival must take into account the likelihood that different jobs may call for different skill profiles and that the priorities placed on certain behaviors by employers may vary from one community or region to another. To prepare clients with disabilities for entry into productive, competitive employment, determination of essential skills for prevocational curricula is critically important. (Alper, 1985).

Mueller and Wilgosh (1985) attempted to establish the most important social and vocational skills and behaviors for entry into competitive employment in Alberta. Provincial vocational training/rehabilitation and transitional training programs serving adults with mental disabilities were surveyed. Those skills consistently highly endorsed as most important for employment success included following directions, good attendance/punctuality, good grooming/hygiene, good social skills, being reliable/responsible/honest, good communication skills, attending to task, cooperative attitude, and accepting criticism. The most common reasons listed by agencies for failure in employment were poor interper-

sonal skills, lack of attendance/punctuality, lack of self-confidence, lack of understanding of the job, poor work attitudes, and lack of follow-up support.

A subsequent study was made of vocational skills training agencies (Mueller, Wilgosh, & Dennis, 1987). The respondents were asked to rate 135 skills statements, derived from the earlier Mueller/Wilgosh study and related literature, for relative importance to employment success. The majority of skills seen as extremely important for job survival related to dependability on the job, social and interpersonal behavior, job safety, attendance and punctuality, acceptance of instructions, criticism and supervision, personal grooming and appearance, and neat work habits.

To obtain the data necessary for the development of a valid employment training curriculum, researchers must survey local employers of occupations for which clients are to be trained. Thus Mueller (1987) attempted to determine which basic vocational and work-related social skills were rated by a broad cross-section of Alberta employers as most important for job survival in entry-level competitive employment. Mueller also sought to determine to what extent the perceived importance of basic job survival skills differed between eight occupations commonly open to persons with mild to moderate mental handicap. The skills statements rated by employers were selected from a larger pool of items drawn from previous research (Mueller & Wilgosh, 1985; Mueller, Wilgosh, & Dennis, 1987). The results revealed that employers wanted employees who were socially responsible and trustworthy, who worked safely, and who could be depended on to do as told with minimum supervision. Given such an employee, employers were less concerned about issues of production speed, employee adaptability, flexibility, and learning proficiency, or occasional negative responses to criticism. For these low skill, entry-level jobs, employers would also appear to place little value on basic prevocational academic skills or the ability to organize and manage others As well, the most important skills were mainly generic across jobs. Different importance was noted predominantly with respect to safety issues and personal appearance and hygiene This finding lends support to the concept of generic skills training in vocational rehabilitation programs for persons with mental handicaps.

To summarize, the recent Alberta research studies of the match between vocational preparation and employer expectations suggest that there is agreement between the skills and behaviors being trained in vocational preparation programs and employer's expectations of the skills and behaviors necessary for successful entry into competitive employment. Social and interpersonal skills are viewed as essential to job success as are specific and generic job skills training. Thus, it should

be possible to train "successful" clients for competitive employment by developing competence in a finite set of skills. However, employer attitudes seem to vary depending on the nature of an individual's disability. In general, employer attitudes are less positive toward employees with disabilities than they are toward employees with no disabilities.

Unfortunately, data is accumulating (Ebert & Dennis, 1986), which suggests that, even though vocational preparation programs are doing well in training appropriate job skills for clients with disabilities, there is no guarantee that such training will be sufficient for either job acquisition or job retention. To illustrate the job skills training dilemma,[2] a recent Alberta study by Gourlay (1985) used a combination of formal tests, background histories, and observed behaviors to make comparisons between groups of successfully employed graduates and individuals still actively participating in a vocational training program. Employed graduates performed significantly better than the in-training group on psychometric, adaptive, and vocational measures From this data and employer input on most common strengths and weaknesses of target employees, a profile of the "successful client" could be generated as a training goal. The major deficiency in such a strategy, however, is that it assumes that there is an average profile for employment. However, simple job site analysis quickly reveals that no employment situation can be considered to be an "average" one. Each situation is unique, requiring its own particular combination of skills and habits. A second major deficiency in such a strategy emerges from practical experience which would suggest that a number of individuals will be able to meet the criteria (i.e., match the profile), yet remain within active training outside the competitive employment sector.

Additional research on employer attitudes (Gibson & Groeneweg, 1986) seems to suggest that employment opportunities for individuals with disabilities may in part be created within the existing private sector by capitalizing on receptive employer attitudes However, because employer receptivity may not translate to willingness or capability to provide on-the-job training, and in recognition that training facilities removed from the real world of work will likely not be able to develop all the relevant work behaviors and skills—including the necessary individualized support network—alternative approaches are needed.

An effective employer-employee matching strategy will include as a substantive part the cultivation of positive attitudes about the work competence of individuals with disabilities within the employment sector. This cultivation of attitudes undertaken at both the large scale community level as well as at the individual employer level would be initiated well in advance of specific approaches for employment, so that

the positive attitudes produced can provide some leverage to gain access to the employment sector—even if only on an individual by individual basis. Indeed, substantial anecdotal information suggests that numerous employers who were initially dubious about the competence of individuals with mental handicaps, subsequent to trial placements or full employment experiences within their enterprises, demonstrated significant attitudinal shifts to the point of independently approaching rehabilitation specialists with requests for new employees. Clearly, the responsibility for inculcating positive attitudes among employers cannot rest solely with the placement counsellor but must be a shared responsibility among diverse sectors of the rehabilitation and employment community.

At a pragmatic level, it may be appropriate to suggest that the leverage for employment opportunities which must be gained, should arise in part through recognition by employers that there is a social responsibility which they must display in order to accrue longer term societal and personal gains. This social responsibility must be recognizable at the societal level rather than the individual ("client") level, which has historically been the basis on which the employers have been approached.

In summary, part of the strategy in matching potential employees and employers involves both aggregate and individual approaches. The aggregate approach involves community education which can lead the way to individualized training and placement along a continuum from full competitive employment to supported employment in enclave situations, depending on the capabilities and needs of the individual employee. This latter stage of individualization will be characterized by a combination of standardized rehabilitation techniques and artful facilitation.

Further directions in vocational training should involve the following changes: (a) Vocational agencies need to become far more sophisticated in their "marketing" strategy, moving away from the áhelp the handicapped" approach to embrace the notion that the vocational training agencies have a valuable product. The person who has graduated from their training programs is one who is reliable, hardworking, and a valuable employee whose disability is not a job handicap. (b) Vocational rehabilitation needs to improve its service to people with disabilities and to the community. Too often, job placement personnel fail to provide sufficient assistance to the employee to make the transition to the workplace. Vocational training agencies also need to encourage commitment from the community and from employers to support training and to hire adults with disabilities. (c) There is also a need to broaden the societal criteria for acceptability and to increase the tolerance for dif-

ference. All of these strategies can lead closer to the goal of successful employment of individuals with handicaps in the competitive workplace.

Notes

1. An earlier version of the content of this paper was presented as a symposium at the Severe & Multiple Handicaps: Alternative Futures Conference, Edmonton, Alberta, May 1987 Authorship is in sequential order of individual contributions to the paper. Author affiliations are L. Wilgosh, Professor, University of Alberta (Educational Psychology); G. Groeneweg, Acting Executive Director, Vocational and Rehabilitation Research Institute, Calgary; H. Mueller, doctoral student, University of Alberta (Educational Psychology); B. Evans, Program Coordinator--Assessment Services, Employment Preparation Centre, Calgary; S. Dennis, Vice-President Research, Western Industrial Research & Training Centre, Edmonton.

2. The following segment and parts of the introduction are abstracted from a larger paper (Groeneweg, Gourlay, Perkins, & Gibson, 1987). G. Groeneweg was spokesperson for the group whose total contribution to the symposium and this ensuing paper is gratefully acknowledged by the authors.

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Adjustment of Adults to a Visual Impairment: Preliminary Findings

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Abstract

A longitudinal study over a period of 12 months was conducted to assess (a) the process of adjustment of adults to blindness and (b) the factors that influence that adjustment. The visual impairment of the seven participating adults took place from five days to eight months prior to inclusion in the study. There has been a need to investigate the process of becoming blind and the stages through which blind persons progress because previous studies concerned with adjustment to blindness are retrospective. Methods of data collection included observations in the natural settings, ethnographic interviewing techniques, and two quantitative measures of social support and acceptance of disability, namely Linkowski's Acceptance of Disability Scale (ADS) and Norbeck's Social Support Questionnaire (NSSQ). Three phases of the adjustment process are pre-impact, impact, and learning to live with the impairment. Factors that influence adjustment have been classified into situations that informants find difficult, factors that help and do not help in adjusting, and coping strategies.

Loss of vision produces serious physical, psychological, social, and economic consequences (Josephson, 1968; Lowenfeld, 1975) which necessitate a major adjustment to life (Franks, 1971). Demands for adjustment are placed on the visually impaired person at the time of the initial impact and in relation to the subsequent ongoing changes that occur because of the loss of vision. Most of the studies that have investigated adjustment to blindness are retrospective. These studies run the risk of losing data or having subjects distort data as they recall events. What was needed was a longitudinal approach to the study of adjustment to blindness. In this study, a longitudinal assessment of the adjustment of adults to blindness and the factors that influenced their adjustment was conducted

Adjustment to Blindness

The initial reaction to a visual impairment consists of various stages or patterns of responses through which the person passes. This initial reaction to blindness has been equated to a grief syndrome in which persons grieve for their lost sight and go through a gradual process, not only of

realization of the loss of vision, but also of the implications of that loss and the subsequent changes that will occur.

For most people, a steady pattern of adjustment appears to occur within the first year. The turning point in the process of recovery is that of reorganization and relearning (Hicks, 1978). Individuals integrate realistic limitations into their lifestyle and recognize the inherent dependence caused by their disability (Franks, 1971; Oehler-Giarratana, 1976).

In an investigation of the meaning of visual impairment to persons who lost their vision as adults, Allen (1985) also elicited several stages through which persons progressed as they learned to live with and adjust to their visual impairment. However, in his investigation, the data were retrospective in that persons recalled experiences of becoming and being visually impaired. Similarly, the majority of investigations on the reactions and adjustment to a visual impairment have been retrospective. That is, the process of becoming blind has not been investigated. Adjustment is an ongoing process. There is, however, a lack of knowledge about whether the needs that arise because of the vision loss and the responses to those needs change over time.

Factors Associated with Adjustment

Following these initial reactions to a visual impairment, the subsequent reactions and adjustment to the vision loss are associated with several physical, psychological, social, and environmental factors.

Physical Factors

Some of the physical factors that are associated with adjustment to a visual impairment include amount of residual vision, cause of the loss, and age of the person. Variations in sightedness have been found to correlate with a number of characteristics such as participation in the labor force (Feinman, 1978), social activity (Josephson, 1968), social function (Keegan, Ash, & Greenough, 1976), independence (Lukoff & Whiteman, 1970), and perceived happiness (Feinman, 1978). The cause of the loss of vision and the age of the person have been hypothesized to be related to the subsequent patterns of adjustment. There is contradictory evidence, however, as to whether visually impaired persons with greater acuity are better adjusted in terms of mobility and acceptance of vision loss and whether older or younger persons have more difficulty in adjustment.

Psychological Factors

The three psychological factors of (a) acceptance of visual loss, (b) previous personality and coping patterns, and (c) self-concept are associated with adjustment to a visual impairment. An important aspect

in adjustment to a visual impairment is the acceptance of the permanence of the loss or the loss of hope for restored vision (Pearlman, Adams, & Sloan, 1977). Research indicates that acceptance of blindness is associated with better psychological and social function (Keegan et al., 1976) and a willingness to acquire other skills and aids for blindness (Fitzgerald, 1970).

Social Factors

Social support and attitudes toward the blind and blindness are two social factors associated with adjustment of adults to a visual impairment. Personal writings of visually impaired persons attest to the contribution of the support of family and friends to their adjustment and independence. Also, in a large number of biographies of blind people, the attitudes of the sighted are singled out as the primary source of difficulties faced in adjustment. The idea that the blind have compensatory or magical abilities or are totally helpless were two commonly reported misconceptions. Research indicates, however, that the sighted population is far from unanimous in its attitude toward people and blindness.

Environment Factors

The four environmental factors of (a) legislation, (b) technology, (c) economy, and (d) organizations are associated with adjustment to a visual impairment. Legislation has been enacted expressly for the benefit of the visually impaired. Technological developments have created new opportunities for richer and more productive lives for blind people (Vaughan & Asbury, 1977). Devices have been created to assist in the achievement of independence in mobility and communication. Chances of achieving financial independence through employment are closely linked to the economic forces that impact on society as a whole. There is, however, higher unemployment among visually impaired populations than there is in the general working population. Also, employment opportunities for the visually impaired fall within a limited range. Organizations for the visually impaired do promote measures for the blind in terms of employment, rehabilitation, education, and legislation.

This study was designed to explore people's perceptions of adjustment as they go through the process of becoming and being visually impaired. The research questions that guided the inquiry were (a) What is the process of adjustment of adults to a visual impairment? and (b) What factors influence the adjustment of adults to a visual impairment?

Method

The methods of data collection were observations in the natural setting, elements of ethnographic interviewing techniques, and quantitative

measures of social support and acceptance of disability. Linkowski's Acceptance of Disability Scale (ADS) is a 50-item, six-point Likert-type scale based on the conceptualization of acceptance of disability as a process of value change. Norbeck's Social Support Questionnaire (NSSQ) is a self-administered questionnaire designed to measure multiple dimensions of perceived social support including functional components, network properties, and recent loss.

Subjects

A convenience sample of seven visually impaired persons (five women, two men) were the subjects of this study. Six subjects were referred to the investigator from the Canadian National Institute for the Blind (CNIB). The remaining subject was referred by nurses at a local hospital. The visual impairment of these persons took place from five days to eight months prior to inclusion in the study.

Procedure

The interviews with informants were of varying lengths of time and occurred over a period of 12 months. Two interviews were conducted in the first month of inclusion in the study. Following this, interviews were done on a monthly basis with telephone calls between these interviews to maintain ongoing contact with each informant. Each interview was tape-recorded and then transcribed.

The first interview began with the statement, "Tell me about your eye problems." Further questions and comments were generated and framed within the context of the interaction with the person and were directed toward eliciting the responses and reactions of persons to their impairment, the factors that influenced these responses and reactions, how the impairment affected their everyday life, and what changes in their life have been or will have to be made because of the impairment.

Observations were made of the subject's interactions with the investigator and significant others and their carrying out of any routine tasks that took place at the time of the interview. Observational notes were made as soon as possible after each interview with the informant.

The ADS and the NSSQ were administered three times during the data collection period. These times were at the initial interview, six months after the initial interview, and at the end of the data collection period. Adjustment, as an ongoing process, changes over time. Thus six months between testings was selected to allow for potential changes in adjustment and the factors associated with adjustment.

Data Analysis

Informants' responses and observational data were described and classified according to the core terms and conceptual categories that

emerged from a reading and abstraction of the data. The adjustment process and factors that influenced that process for each informant were described. Similar as well as divergent patterns were identified. The resulting model identifies the regularly recurring patterns and configurations of adjustment to visual impairment. Similarly, comparison of the factors that influence adjustment for each informant identified the common as well as divergent factors.

The relationship between social support, acceptance of disability, and adjustment that emerged from the analysis and from the two questionnaires was examined for congruence. Changes were noted from one testing to the next.

Results

Data collection is completed for this study and analysis has begun. The preliminary analysis of the data is presented in this paper. The configuration of adjustment may change when analysis is completed.

The Adjusting Process

The adjusting process appears to have three phases: pre-impact, impact, and learning to live with the impairment. In the pre-impact phase, informants were either not consciously aware of their vision loss or there was lack of recognition of the significance of the changes that occurred. There appears to be a gap between the time that the eye disease causes change in vision and the persons' recognition that he/she has an impairment. This may be related to perceptual ability. This gap does not occur in people who have become visually impaired very suddenly. However, these latter people do need to learn about their impairment. As one woman who woke up with no vision in her right eye said, "I don't know my limitations and what to expect; I still have to learn that."

Following awareness of their visual impairment, initial reactions to the impairment occurred. One woman stated, "It's like everything of value has been taken from you." Some words that people use to describe this period include shock, fright, uncertainty, surprise, depression, and uselessness. They wondered about the future and asked, "How will I cope?"

At some point after these initial reactions, people make the decision to learn to live with their impairment. Most of the people stated that there was no other choice: "You have to keep on going." When asked what leads to this decision, most subjects are unable to articulate the thinking that was occurring.

Learning to live with the impairment is an ongoing process. It does not move continuously forward. That is, people frequently reach a certain point in their adjustment and stay at that point for a period of time. What stimulates the next period of growth is still unclear. It may just be

time and experience and it may be that the factors that influence adjustment are operating.

Learning to live with the impairment is not easy. It is frequently seen as a battle or a fight. As one woman stated, almost every day she has to decide not to give in. There are ongoing reactions of frustration, annoyance, and impatience. For some there are good days and bad days. Good days are full of hope and bad days full of frustration. These ongoing reactions are not as overwhelming as the initial ones and do not last as long. This phase of adjustment can be a period of risk taking. The things that they felt they could not do (the can'ts) are readdressed, and attempts are made to learn strategies to turn these or some part of them into "cans."

Factors that Influence Adjustment

The data can be classified into several categories or factors that influence adjustment. These include things that informants find difficult, factors that help in adjusting, factors that do not help in adjusting, and coping strategies. Each is described briefly.

Situations that informants find difficult. Within this category are classified behaviors, tasks, or situations that informants state are the most difficult for them in adjusting to a visual impairment. The subcategories that emerge include (a) inability to carry out valued tasks, (b) inability to recognize friends and acquaintances, (c) explaining to others about their impairment, (d) asking for help, (e) carrying out activities of daily living, and (f) mobility.

Factors that help in adjusting. These are the factors that aid or facilitate learning to live with the impairment. Support is cited as the main factor that helps in adjustment. Support comes not only from family or friends but also from official agencies such as CNIB. This, in part, is because they have an opportunity to meet other blind people. Subjects state that it helps to have someone else who is visually impaired with whom to share experiences. Other things that aid adjustment include learning what they can still do, time, visual aids, information about their impairment, and their internal strength

Factors that do not help in adjusting. These are the factors that informants state do not help in their adjustment to their impairment. These include lack of information, fluctuating vision, economic factors, comparison with previous abilities, pride, perceived unhelpful or negative behavior in people, other health problems, and the health care delivery system.

Coping strategies. Coping strategies refer to the actions, plans, or cognitive maneuvers that informants use to deal with the visual impairment itself and the emotions evoked by the situation. Informants reported using a combination of strategies. One particular strategy of

interest is comparison with others. Defining and evaluating others as "worse off" appears to be helpful for informants as a motivating factor for adjusting and as a means of achieving a sense of perspective about their impairment. Other strategies that subjects used included learning new ways, information seeking, search for meaning/attribution, establishing routines, taking each day at a time, and using previous coping strategies or experiences.

In summary, the multiple factors outlined in the categories influence each other and, in turn, influence the process of adjusting As adjustment proceeds, the importance of each of the factors can also change. Explaining to others becomes easier, and the coping strategies are successful in helping the person learn new ways.

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The Effects of Joint Activity Intervention on Children's Pragmatic Language Skills

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Abstract

This paper reports on an exploratory study of the turntaking and pragmatic language skills of handicapped children during parent-child reciprocal play compared to that of non-handicapped children. The handicapped children were 25-36 months of age. The paper also describes a pilot intervention involving carefully structured joint activity play routines designed to increase generalized pragmatic language skills.

Turntaking Intervention

The turntaking, play routines of parents and their children appear to provide the basis for the development of language as a socio-communicative or pragmatic behavior (Bruner, 1978). The reciprocal or give-and-take alternations involved in the turntaking changes provide a child with experience in affecting and being affected by the communicative behavior of another person (Bruner, 1978; Coggins & Carpenter, 1981; Snyder-McLean, Solomonson, McLean, & Sack, 1984). Children learn to regulate these exchanges through gestures and then verbal language in the form of comments and requests made to the interactive partner (Bruner, 1975; Demetras, Post & Snow, 1986). Accordingly, any breakdown in the development of turntaking ability might also adversely affect a child's ability to develop pragmatic language skills (Girolametto, 1985; Snyder, 1978)

Comparisons have been made between nonhandicapped and handicapped children on measures of turntaking skills in play interactions (Jones, 1980; Kogan, Wimberger, & Bobbit, 1969), as well as on pragmatic language skills (Snyder, 1978). Handicapped children appear to have difficulty assuming a role in discourse situations; as a result, there are lower levels of turntaking. Moreover, caretakers may become directive and controlling of their children's behavior, particularly when the degree of handicap is great (Breiner & Forehand, 1982). Consequently,

the child is prevented from taking an active role in turntaking interactions (MacDonald & Gillette, 1982). Handicapped children may also exhibit a pragmatic language deficit (Snyder, 1978). They may acquire words but not the ability to use those words consistently to refer to objects in specific situations that involve making requests of, or commenting to, a listener.

By inference, any child who demonstrates a turntaking deficit might also be expected to demonstrate a pragmatic language deficit and vice versa. No study has attempted to measure both the turntaking and pragmatic language skills of handicapped children and to compare their performance with that of nonhandicapped children, despite the fact that the two skills have been linked in the developmental literature. The present exploratory study was a comparison of four handicapped children with 14 nonhandicapped children on measures of turntaking with their mothers and on pragmatic language skills. The four handicapped children were subsequently involved in the 14-week language intervention portion of the study.

Method

Subjects

The four handicapped children (1 boy, 3 girls) ranged in age from 25 to 36 months of age. These children had an expressive vocabulary range of 9-33 words and their speech was limited to single word utterances. Their scores on the Bayley Mental Development Subscale (Bayley, 1969) ranged from 18-21.5 months (7-17-month delay). Their scores on the Bayley Motor Development Subscales ranged from 9.5-25.5 months (3-18 month delay). Their receptive and expressive scores on the Sequenced Inventory of Communication Development (Hedrick, Prather, & Tobin, 1984) ranged from 16-20 months respectively (5-20 month delay on both subtests). One child exhibited Down's Syndrome and two others had motor disabilities along with cognitive delays.

The 14 nonhandicapped children ranged in age from 15-19 months. Thirteen of the children had an expressive vocabulary range of 5-37 words; their speech was limited to single word utterances. One child had an expressive vocabulary of 60 words with a minimal number of two word utterances. Their scores on the Bayley Mental Development Subscale ranged from 14.5-25.6 (4 months below to 9 months above age level). Their receptive scores on the Sequenced Inventory of Communication Development ranged from 16-28 months (2 months below to 8 months above age level) and their expressive scores ranged from 16-20 months (2 months below to 4 months above age level).

Identical baseline assessments were performed on both the handicapped child-parent dyads (HC) and the nonhandicapped child-parent dyads (NHC). These assessments consisted of:

1. measures of turntaking ability, and
2. measures of pragmatic communication ability.

Turntaking Tasks

Mothers and their young children typically engage in simple, reciprocal play routines which provide the context for gestural and verbal communication. The turntaking tasks used in the current study were based on those developed by MacDonald and Gillette (1932).

The turntaking task consisted of six 2-minute intervals during which the mother interacted with her child using a different toy object in each of the intervals. The toys were selected because they appeared to provide for simple reciprocal play actions. The particular variables of interest in the turntaking interaction were turn mode and length and interactional strategies.

Turn mode related to the communicative mode employed by the dyadic members. That is, the communicative behavior of both adults and children were categorized as action, vocalization, word, or phrase. MacDonald and Gillette (1982) argued that an adult should display actions and communications only slightly more advanced than those of the child so that turntaking exchanges will optimally facilitate progressive changes in the child's behavior.

Interacting with a child at his/her current level of functioning is *mode-matching* and modeling and expansion are strategies for *progressive matching*. Non-mode matching occurs when the adult displays behavior two modes or more above the child's behavior as in the case of an adult talking in words or phrases to a child who is behaving primarily at an action level. Mode-matching by the adult and use of progressive matching strategies allows the child to more easily assimilate new behavior into his/her existing repertoire (MacDonald & Gillette, 1982).

Turn length was also felt to be an important variable in the turntaking exchanges. MacDonald and Gillette (1982) argued that the longer the turntaking exchanges were the more opportunities there were for displaying new behaviors to be learned by the child. Ideal turntaking exchanges are characterized by adult behavior that progressively matches the child's behavior and that also serves to facilitate continued participation in the joint activity.

Eight categories of adult *interactional strategies* were developed based on the concepts of mode-matching and progressive matching. In addition, five categories of child behavior were developed based on the assumption that children possess a repertoire of interactive behaviors

that enable them to participate actively in the learning process. These interactional strategies were observed during the turntaking tasks engaged in by each dyad in the study.

Communication Tasks

According to Bruner (1975) and Bates, Camaioni, and Volterra (1975), children utilize gestural and linguistic communication either to get an adult's attention or to get an adult to do something for the child. These two intentions have been referred to respectively as comments and requests by Bruner and as declaratives and imperatives by Bates et al. In the present study, declarative and imperative communication tasks were developed based on those used by Snyder (1978). The declarative task is based on the observation by Greenfield and Smith (1976) that children are most likely to draw an adult's attention to new or changing situational elements as opposed to old or unchanging elements.

Imperative tasks consisted of situations in which toys or objects were held by the experimenter within a child's visual field but out of reach in order to facilitate a request for the toy or object. Children's responses on the two tasks were scored using a developmentally-ordered rating scale described by Sugarman (1973, cited in Snyder, 1978) that covers a progressive sequence of gestural to linguistic communication behaviors.

In the present study, objects were obtained for five words that appeared in each child's language sample. Each object was presented first in a declarative task followed immediately by the imperative task. The variables of primary interest were the percentage of gestural versus linguistic responses on the two communication tasks. The rating system allowed for identification of various gestural or nonlinguistic behaviors. The research has suggested (Snyder, 1978) that handicapped children with comparable vocabularies to those of normal children may exhibit a pragmatic deficit in the use of that language (Snyder, 1978). They may use gestures, rather than words they have already acquired, to get the adult's attention or get the adult to do something in specific communication situations such as the communication tasks used in this study.

Following baseline measures of turntaking behavior and communicative behavior of both the HC and NHC dyads, the HC dyads were involved in a period of joint activity intervention. Joint activity routines have a number of characteristics that may facilitate the development of pragmatic language skills (Ratner & Bruner, 1978; Snyder-McLean, et al., 1984). They provide a simple but highly familiar play-oriented framework for the child, into which the adult can introduce functional language. As mentioned earlier, the turntaking nature of the routines provides a child with experience in affecting and being affected by the communicative behavior of another person as the basis for the develop-

ment of pragmatic language skills. Ratner and Bruner (1978) have observed that language learned within the confines of these structured games generalizes to a variety of other practical speaking situations.

The intervention portion of this study was an attempt to determine experimentally whether joint action routines structured carefully for turntaking interaction do provide assistance to children in developing and generalizing pragmatic language skills as suggested by Ratner and Bruner (1978). Specifically, words from the four handicapped children's vocabularies were modeled by their mothers in the context of simple but highly familiar play routines established for each mother-child dyad Each child's use of these words in the play routines and their subsequent generalization to the communication tasks and home environment, as determined by a post-treatment language sample, were evaluated. The research question asked was whether children would increase their communicative or pragmatic use of words already in their lexicons if these words were highlighted in the context of turntaking routines. In effect, does joint activity intervention result in a reduction of a demonstrated pragmatic language deficit?

The study consisted of two phases. Phase I (Turntaking with Actions) involved reciprocal turntaking based on simple actions with toys. One intent of this phase of intervention was to establish the turntaking, joint activity framework into which the target words could be inserted and to extend the length of the social interaction in order to increase the frequency of opportunities for the child to use the words within the social interaction. The terminal criterion for Phase I of intervention involved sustained turntaking at the action level.

During Phase II (Turntaking with Communications), mothers were instructed to model target words within the previously developed action turns of both mother and child. Terminal criteria for Phase II involved spontaneous use of several specific target words during play interactions.

Results

Baseline Comparison Between HC and NHC Groups

Analysis of results of turntaking tasks revealed that there was little difference between the two groups of children and mothers in turntaking or interactional performance. In particular, the mothers of the handicapped children were no more likely to mismatch the turntaking mode of their children than the mothers of nonhandicapped children and they were no less effective in sustaining their children in turntaking sequences. They were similar to the mothers of nonhandicapped children in use of various interactional strategies. Analysis of communication task results revealed that the ratings for the handicapped children were

within the distribution of ratings of the nonhandicapped children but toward the lower end.

The handicapped children received ratings of approximately 50% fewer linguistic responses (versus gestural responses) when compared to the nonhandicapped children on the declarative task. The percentage of linguistic responses to the imperative task was similar for both groups of children.

Intervention Results

Turntaking mode. The frequency of occurrence of each mode of communication used by the mothers involved in the study was generally consistent with the phases of the study. That is, during Phase I of intervention, each mother showed an increase in actions. Their use of words either remained stable or decreased slightly. There was also a sharp decrease in their use of phrases. Following Phase II, mothers' use of actions typically remained high relative to baseline performance. Their use of words increased substantially over previous performance. Phrase use also increased somewhat. Use of vocalizations remained relatively stable across repeated administrations of the turntaking tasks.

Three of the four children had similar results to those of their mothers, with increased action turns following Phase I and increased word use following Phase II. However, their degree of change is not as significant as that of the mothers in the study. The fourth child exhibited the reverse pattern of performance for actions but did increase word usage following Phase II of intervention. Vocalizations were highly variable across children and phrase use was negligible.

Turntaking Length. Length of turns and number of turn sequences were considered to be measures of competency in turn use for the mother-child dyads. In general, there was an increase in turn length in Phase I and a decrease in Phase II, while the opposite trend was evident for number of turn sequences per 2-minute play session: a decrease was shown in Phase I with an increase in Phase II. Overall dyadic competency, therefore, remained relatively constant or showed an increase over time, with turn length increases predominating during Phase I of training and increases in number of turn sequences predominating during Phase II.

Interactional Strategies. The interactional strategies mothers were specifically instructed to use during joint activity routines were imitation of actions during Phase I and imitation of communication, vertical expansion and modeling during Phase I; and imitation of communication, vertical expansion and modeling during Phase II. Mothers increased their use of imitation of actions following Phase I. Two parents returned to baseline levels and two continued to increase in the use of that strategy following Phase II. Mothers' use of imitation of com-

munication remained stable until after Phase II when all mothers showed an increase. Mothers' use of vertical expansion either remained stable or increased slightly following Phase I. All mothers exhibited a noticeable increase in the use of vertical expansion following Phase II. Use of vertical modeling was highly variable across mothers.

It was felt that specific child interactional strategies would be facilitated by the strategies that the mothers were encouraged to use. All children increased their imitations of actions although the individual patterns of performance were variable over the course of the intervention. Similarly, all children increased imitations of communications, two gradually over the two phases and two markedly, following Phase II. All children increased their use of vertical initiations, typically after Phase II.

Communication Tasks

The communication tasks in conjunction with pre-post language samples were utilized to assess the effects of the intervention in pragmatic language skills. Subject responses on communication tasks were scored as linguistic if the child used the specific word targeted in intervention or another word that was nonetheless appropriate to the task (e.g., that, gimme). The later category was included to determine if the effects of the intervention were specific to the words targeted or whether there was a more general tendency of the subjects to use words to call attention to, or request an object from, an adult over the course of intervention.

Results indicated a change in both Imperative communicative tasks and the Declarative communication tasks, with the greatest magnitude of change occurring in the latter. Subjects increased their use of either specific or nonspecific words used in the pragmatic language tasks. The changes that occurred were largely due to a child's responses on the two words as targeted in intervention.

Frequency of usage of the two target words in the pre-post language sample increased for all four children, with one child showing an enormous change.

Discussion

In evaluating the relative performance of the HC and NHC dyads, it becomes apparent that there was a discrepancy between turntaking ability and communicative ability. The performance of the handicapped children on the communication tasks was toward the lower end of the distribution of the normal children with a major difference in performance evident on the Declarative task. This was in contrast to the results of the turntaking tasks where the handicapped children were typically toward the higher end of the distribution of scores for the nor-

mal chil. ren. Consequently, there was a discrepancy in performance between turntaking tasks and communication tasks for the handicapped children that did not exist for the nonhandicapped children. This finding indicates that the handicapped children had at least a mild pragmatic deficit, particularly in view of the ceiling effect on the performance of the normal children on the communication tasks.

The turntaking and communication results were somewhat surprising. Earlier research indicated that performance of the handicapped children and their mothers on the turntaking tasks might be depressed when compared to nonhandicapped children and their mothers. Their very favorable turntaking performance in this study may be due, in part, to their previous experience participating together in early intervention learning activities. Despite favorable social interaction with their mothers, the handicapped children displayed a pragmatic language deficit. Similar to the results of Snyder (1978), the handicapped children in this study performed at a lower level (4) than did the nonhandicapped children (5-6) on the Means-Ends Scale of the Uzgiris and Hunt Ordinal Scales of Psychological Development (Uzgiris & Hunt, 1975) administered at the beginning of the study. Language is a tool in social interaction and this finding seems consistent with the presence of a pragmatic deficit (Snyder, 1978). Finally, Schwartz, Chapman, Terrell, Prelock and Rowan (1985) pointed out that failure of children to acquire normal language assumes that the facilitating aspects of normal interaction occur with sufficient frequency to be of benefit of the child.

The results of the turntaking tasks suggested that the joint activity intervention had some generalized effects on the interaction between the handicapped children and their mothers. The frequencies of action, word, and phrase use by the mothers are consistent with the goals of each phase of intervention. As expected, there were increases in actions following Phase I and increases in word and phrase use following Phase II. Similar generalized effects for mode of interaction were not as clear or consistent for the children, but their performance was typically in the appropriate direction.

The decrease in mode-matched turns demonstrated by all four dyads following Phase II of treatment was not anticipated; however, in retrospect, it appeared to have a logical origin. Mode-matched turns required parents to be communicating at a level not more than one mode higher than the mode used by their children. Therefore, in order to fulfill the criteria for mode-matched turns during Phase II, a parent and her child had to communicate about the same topic for a number of uninterrupted turns utilizing at least the single word level. It seems unlikely that the children would be able to maintain communication at a word level for as long as they were able to at the action level. Thus,

there was a decrease in mode-matched turn length following Phase II of the study.

In general, increases in turn length were matched with decreases in number of turn sequences. It appears that at this level of development, turn length and number of turn sequences may be corollary concepts.

The use of interactional strategies by the mothers, as described earlier, were generally consistent with the instructions they received during each phase of intervention. The children's use of interactional strategies was also generally in line with expectations, based on the goals of the intervention phases.

The results of the communication tasks suggested that joint activity intervention can result in increases in pragmatic language skills of handicapped children. Two of the four children showed steady improvement in linguistic responses on the communication tasks. All four children exhibited increases in the frequency of use of the target words on the pre-post language samples.

This study was a preliminary attempt to explore the relationship between social interaction and pragmatic language skills in children, specifically in the form of highlighting word use within turntaking joint activity routines and elicitation of words as declaratives and imperatives on communication tasks. The results are limited by aspects of the study. In particular, there is not a clear demonstration of experimental control. The results cannot be attributed to the intervention program with confidence. A subject multiple baseline was utilized initially with both pairs of children. Due to illness and absence, the lag time between children disappeared and they were essentially run concurrently. The children who were available for the study were not homogeneous which could account for some of the variability in performance. There appeared to be some loss of interest by the children in participating in the communication tasks after several repeated administrations which may have depressed their performance. Some variation in the repeated measures for pragmatic language skills that would maintain task motivation appears to be in order. Finally, it should be pointed out that joint activity intervention is a package of variables and no conclusive statements can be made about any single variable. The conclusions to be drawn from this study should, therefore, be considered only tentative.

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Why Change our Service Delivery in Special Education?

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Abstract

This paper challenges the theoretical knowledge base upon which the separate special education delivery system has been developed. Arguments for integration of special needs children into the mainstream of education are presented from a social-ethical, educational-psychological, and legal-legislative perspective.

The evolution of education for the child with exceptional needs has moved from exclusion from regular classrooms to increased inclusion. Arguments for why children should be integrated are presented from social-ethical, educational-psychological, and legal-legislative perspectives The movement from segregated to integrated placements is a result of the criticisms of the applied or practical knowledge base in special education (Skrtic, 1986). However, the theoretical knowledge base, or the premise on which special education was developed, has remained unchallenged. This paper discloses the issues and concerns that have arisen from this service delivery model. A more detailed discussion is found in Skakun (1987).

Social-Ethical Arguments for Integration

Placement of students with disabilities in special education classes in schools away from the neighborhood school perpetuates segregation and isolation and creates barriers to becoming fully accepted, participating members in our community. Integration and normalization is a goal of society (Brinker & Thorpe, 1984). The benefits accrued from integration are of value both to exceptional children as well as their peers. When students learn alongside nonhandicapped peers in the neighborhood school, they are provided with role models for good social skills development and have more opportunity for social interactions and the possibility of establishing friendships in their neighborhood. Their peers' and society's perceptions of the handicapped can be altered through increased participation in integrated educational settings, hence furthering the goal of increased community participation (Bricker, 1978; Brinker & Thorpe, 1984). Children with disabilities have a right to live, work, and play within the culture in which they live, not within a sub-

culture (Brown, 1986). Increased participation in integrated settings that are supported and planned for can only lead to future generations that are more humanitarian and more accepting of the individual differences of exceptional children and adults.

Educational-Psychological Arguments for Integration

The exclusionary process of placing students in special classes further depressed the already lagging developmental growth of the impaired child and deprived these children of the stimulation of nonhandicapped children as learning models and helpers. Interaction in a progressively more demanding environment, so essential to the "normal" child, is equally important to the disabled child (Feuerstein, Rand, & Hoffman, 1982; Guralnick, 1978).

The strongest argument for integration is the research on the efficacy of special classes (Dunn, 1968; Glass, 1983). Dunn (1968) questioned the effectiveness of special classes for the educably mentally handicapped. He cited the long history of "efficacy" research that has failed to indicate that children who attended special classes achieved more than children who attended regular classes.

> The research concerning the educational effects of ability grouping and special education reveals that classification, as it is typically employed, does not promote individual student learning, permit more effective teaching of groups of students of relatively similar ability, or indeed accomplish any of the things it is ostensibly meant to do. (Feuerstein et al., 1982, p. 13)

The dominant trend in efficacy research has favored children attending regular classes (Brinker & Thorpe, 1984; Goldstein, Moss, & Jordan, 1965; Gottlieb, 1981; Madden & Slavin, 1983; Semmel, Gottlieb, & Robinson, 1979; Strain & Kerr, 1981). Integration is an educational tool for achieving curriculum goals (Brinker & Thorpe, 1984).

Legal-Legislative Arguments for Integration

These arguments for integration have evolved from court battles and legislation that required that handicapped children learn in "normal" environments.

Internationally, "normalization" (National Institute on Mental Retardation, 1981; Nirje, 1985; Perrin & Nirje, 1985), "the principle of educating handicapped persons in and for the 'normal' environment of the non-handicapped" (Reynolds & Birch, 1982, p. 25), became the policy in the 1960s in the Scandinavian countries. This movement is worldwide and appears to be enduring (Reynolds & Birch, 1982). In the United States, litigation and legislation have led to the inclusion of the handicapped in regular educational settings. In Canada, national, provincial, and local associations, as well as numerous chapters across

Canada belonging to the Integration Action Group are rallying together to demand an educational system that reflects quality, relevance, and equity for their children.

As of April 17, 1985, Section 15 of the Canadian Charter of Rights and Freedoms guarantees equality for all irrespective of race, religion, sex, age, or mental or physical disability in all parts of Canada except Quebec (McLellan, 1986). In the Equality For All Monograph, authorized by the Parliamentary Committee on Equality Rights (1985), three legislative amendments relevant to the mentally disabled are recommended:

1 that federal laws and politics providing benefits or protection to the mentally disabled be appropriately amended so that they cover those with a mental disability in the comprehensive sense, that is, mental retardation or impairment, learning disability and mental disorder

2 that Section 14(4) (f) of the Canadian Elections Act be repealed so that the mentally disabled have the same right to be enumerated and to vote as all other Canadians

3 that the Minister of Justice bring forward amendments to the Criminal Code at the earliest opportunity to eliminate instances where the mentally disabled are not accorded equal protection and equal benefit of the law (The Parliamentary Committee on Equality Rights, 1985, p 176, as cited in McLellan, 1986, p 7)

"*Equal benefit* implies the opportunity for students to achieve their fullest potential and best development as members of the particular human society into which they are born or immigrated" (Porter, 1986, p. 8).

Although it is not yet known how the Canadian judicial system will interpret the third amendment, in the following section there are some examples of the American interpretation. Equal protection and equal benefit of the law are denied when tracking or ability grouping is based on standardized tests, misclassification occurs, handicapped students are denied access to interaction with nonhandicapped peers, decisions are made regarding student placement without due process, placement is made without appropriate program planning and support, and monetary problems are used as an excuse to violate student rights (Ysseldyke & Algozzine, 1982)

In education, to ensure that the disabled learner is "accorded *equal protection* and *equal benefits of the law*" (McLellan, 1986) each province has revised or is revising its School Act to reflect these major changes.

Although Alberta Education in *Partners in Education Principles for a New School Act (1985)* promised to entrench Section 15 of the Canadian Charter of Rights and Freedoms, Bill 59, the 1987 proposed New School Act, appeared to contravene this section of the charter, as this bill would have given school boards the right to declare a student

non-educable and refuse to provide special education or any other education because of "severe lack of intellectual capacity" or "severe medical fragility."[1]

Parents whose children are denied access to an educational program will have no recourse but to take legal action. Rather than using valuable dollars for productive educational purposes, depleting resources will be spent on legal expenses. Every child is capable of learning. Failure to do so is a reflection of the inadequacies of our educational system, not deficiencies within the child (Sobsey, 1987).

Currently, the Individual Rights' Protection Act (Province of Alberta, Consolidated July 19, 1985) does not include the protection of the mentally handicapped from discrimination. To protect mentally handicapped individuals from flagrant abuse of the non-educable clause in the proposed Bill 59. the Individual Rights' Protection Act needs to address issues regarding assessment, student evaluation and identification in special education, and its possible impingement on equal protection and equal benefit of the law. The U.S. ruling that tracking or classifying students on the basis of standardized tests is unconstitutional and does not reflect the child's capacity to learn (Galagan, 1985; Prasse & Reschly, 1986) has implications for educational practices in Alberta and in Canada.

The Current Service Delivery Model

Our current service delivery model in special education requires screening, assessment, labelling, and placement into a special education category before services and funds (at the district level) can be accessed. A number of issues and concerns have arisen from this practice.

A disproportionate number of minority and bilingual children have been misclassified as mentally handicapped based on intelligence tests standardized on white children (Ingalls, 1978; Madden & Slavin, 1983; Semmel, Gottlieb, & Robinson, 1979). Ethnic students who are doing poorly but not creating problems are not likely to be referred to special classes. However, if they are also behavior problems, their chances of being placed in special classes greatly increase (Ingalls, 1978; Kirk & Gallagher, 1983) Special classes have become a dumping ground for all kinds of problem students. Regular teachers find it easier to arrange to have a child moved to a special class than to try to resolve the problem and provide the special programming required.

Labelling children as mentally handicapped has a stigmatizing effect (Bricker, 1978; Dunn, 1968; Gottlieb, 1981; National Institute on Mental Retardation, 1981) The label could have an important impact on their self-esteem and "massively damaging effects upon the individual's prospects in life" (Feuerstein et al., 1982, p. 9), as it reduces their self-image and their worth in the eyes of others (Dunn, 1968; Feuerstein et

al., 1982). Labels generate uniform attitudes and responses The individual, the family, the community, and the school develop a whole series of behavioral expectation (Feuerstein et al., 1982, p. 12), misconceptions, images, stereotypes, beliefs, and fears of the handicapped (Feurerstein et al., 1982; Strain & Kerr, 1981). Special classes further serve to emphasize the atypical characteristics rather than the strengths or positive attributes of the child with special needs. These children are viewed as different; they are not viewed as having qualities and strengths along a continuum of development (Guralnick, 1978).

Labels suggest that these children can be sorted into neat homogenous categories requiring identical educational services (Strain & Kerr, 1981). Assigning all children in a given I.Q. range to one class is useful only if the children learn in the same way. However, these children have as many different learning styles as there are children in a class (Biklen, 1985; Feuerstein et al., 1982; Reynolds & Balow, 1972; Stainback & Stainback, 1984; Wang & Birch, 1984).

Labelling students also results in the "self-fulfilling prophecy" phenomenon. Less is expected of students identified as mentally handicapped, and as a result they achieve less (Dunn, 1968; Strain & Kerr, 1981; Ysseldyke & Algozzine, 1982; Will, 1986). Because learning abilities of students are underestimated and the curriculum is "watered-down," special education programs are failing to provide a sufficient challenge to the students (Feuerstein et al., 1982: Madden & Slavin, 1983).

Feuerstein et al., (1982) discuss the detrimental effects of labels on "educational goal setting":

> It ipso facto orients the teacher, and no less the whole environment, toward concrete modes of transmission, problem presentation and response management. Very limited use is made of higher levels of thought processes, symbols, and abstract levels of communication (p. 15)

Our curriculum restricts the mentally handicapped from developing in the very areas in which they are weak—that is, the "autonomous, abstract, representational cognitive functioning" (Feuerstein et al., 1982, p. 14) Thus we have a perpetuation of "low level functioning."

All special education decisions are made on the assumption that we have testing instruments that are technically adequate to discriminate the degree of mental handicap that exists in an individual or the special education category to which the student belongs.

Misclassification can occur between moderately handicapped, learning disabled, and emotionally disturbed categories (Galagan, 1985) because of the overlapping characteristics identifiable in these three categories. Misclassification can also occur within the categorical boun-

daries of dependent, trainable, and educable (National Institute on Mental Retardation, 1981).

Placement of students has been dependent on standardized tests that have a number of deficiencies (Galagan, 1985, p. 288):

1 They are culturally and socially biased resulting in the misclassification of minority children

2 They are unreliable and unvalidated for the purpose of determining which children have characteristics consistent with mildly handicapping conditions (i e moderate mental retardation, behavior disordered, learning disabled) and with placement in mildly handicapped classes

3 They are convenient and expedient means of classifying and excluding children from regular education and have thus fostered the creation of a dual educational system

4 They are of little or no use in formulating instructional programs for students, particularly those classified as mildly handicapped

Other factors contributing to a deficiency in assessment and placement are inappropriate use of tests and inappropriate interpretation of test scores. Test abuse can further result if the standardized tests have not been appropriately normed or if the norms are not current (Torgesen & Wong. 1986; Ysseldyke & Algozzine, 1982).

Despite the growing body of research indicating that the traditional assessment practices are inadequate and provide no relevant information for program planning (Galagan, 1985), public policy continues to support a massive system of identification that is intent on finding deficits, disabilities, and dysfunctions in the child to be eligible for services. The current system of classifying students for special educational services on the basis of etiology rather than educational need is also not serving the child who needs help, but who does not fit into any category (Will, 1986). It is estimated that 50% to 60% of all school children are in need of help (Ysseldyke & Algozzine, 1982).

One Psychology of Learning for All Students

Special education typically has been based on the medical model of diagnosing the deficit, disability, or dysfunction within the individual on the basis of supposed common symptoms or characteristics and providing an educational treatment to match the deficit, disability, or dysfunction (Cocks, 1985) It was assumed that amelioration of the disability, deficit, or dysfuntion (e g., visual perceptual training, perceptual motor training, psycholinguistic training) is necessary before academic skills can be learned. This approach has been documented as ineffective (Galagan, 1985; Glass, 1983; Reynolds & Birch, 1982; Torgesen & Wong, 1986; Ysseldyke & Algozzine, 1982) Direct instruction or instruction based on assessment of students' skills rather than the cause

of academic difficulty has been most effective (Galagan, 1985; Glass, 1983; Ysseldyke & Algozzine, 1982).

The most recent assumption to be challenged is "that there are two methodologies or psychologies of learning—one for 'special' people and one for 'regular' people (Stainback & Stainback, 1984, p. 103) Stainback and Stainback present the rationale for a *merger of special and regular education*. The dual educational system is not necessary as "there are no unique methods for use with exceptional children that differ for those used with normal children" (Gardner, 1977, p. 74).

Conclusion

Our educational system is not meeting the needs for children with learning problems. It is based on assumptions that have been criticized as being atheoretical, confounded theory, and wrong theory (Skrtic, 1986) The way our system has addressed the serious problems in education is flawed (Reynolds, Wang, & Walberg, 1987).

As Gerber (in press, as cited in Reynolds et al., 1987) summarizes,

> for practical purposes, there is increasingly convergent belief that these subgroups of learning problems represent a continuum of cognitive and adaptive inefficiency and ineffectiveness in classroom learning situations, and not discreetly different disabilities (p 394)

Given the serious problems in grouping students into "various categories that lack evidence of validity" (Reynolds et al , 1987, p 396) and the false premises on which special education has been established, we are in need of redevelopment and redesign of our current service delivery model.

We need to create a general education program that includes instructional strategies that can accommodate and adapt to children with varying educational needs. Skrtic (1986) suggests that in redesigning our educational system our disciplinary base should expand beyond psychology and biology to include social, political, and cultural sciences We can then create a service delivery with an alternative frame of reference

Editors' Note

1. Revisions to Bill 59 have just been released at the time of publication and appear to remedy the expressed concerns.

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Integration—How Can We Make It Work?

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Abstract

Returning exceptional students into an unchanged, inflexible, nonadaptive, inefficient, and ineffective classroom environment with the teacher's aide acting as an adjunct to the traditional school and classroom structure is an over-simplified solution to integration. The purpose of this paper is to describe strategies that can be used to support the practical application of integration.

Successful Integration

Successful integration of special needs children is not dependent on the degree of handicap inherent in the individual, but on many factors external to the individual. The Canadian Association for Community Living (Porter, 1986) has cited four interdependent strategic factors necessary for success: political will, a shared set of values, instructional supports and strategies, and practical application. This paper focuses on a variety of instructional supports and strategies available to the classroom teacher. A more detailed discussion of the topic is found in Skakun (1987)

Modifications in the Classroom that Facilitate Integration: Instructional Supports and Strategies

If the needs of the exceptional student are not being met in the regular classroom, in addition to preparing *every* teacher to teach the special needs child, we must adapt, modify, and restructure the setting until the needs are met (Stainback, Stainback, Courtnage & Jaben, 1985). Educators at all levels, policy-makers, parents, and advocates need to be aware of the theoretical knowledge base that supports the practical application of integration In the following section is a list and brief description of a number of different modifications and strategies that can be employed

Individualized instructional methods This strategy is:

> instructional programming designed to accommodate for specific educational characteristics and needs on a per student basis Such programming is criterion based, instructional objectives, pacing, and materials are selected according to their appropriateness to the individual student rather than norm-referenced or

> selected in accordance with the expected average for the student's peer group (Stainback et al., 1985, p 146)

The Individualized Educational Plan (IEP) is the framework from which parents, teachers, specialists, and paraprofessionals share the responsibility of educating the exceptional child Although individualization is a fundamental part of the Individualized Educational Plan (Strain & Kerr, 1981), requiring that IEPs be prepared does not guarantee that individualized instructional methods will be employed. If teachers do not have the knowledge and the experience to use individualized instructional methods, then writing IEPs is of little benefit to the child.

Adaptive Learning Environments Model (ALEM). In the Adaptive Learning Environments Model (Reynolds & Wang, 1983; Wang & Birch, 1984; Wang & Walberg, 1983) the assumption is:

> that students learn in different ways and at different rates and as a result, effective school programs require both the inclusion of a variety of instructional techniques and learning experiences that match the needs of each student and the allocation of adequate amounts of time for all students to learn (Wang & Walberg, 1983, p 604)

Through adaptive instruction regular students, students with mild to moderate handicaps, and the academically gifted can have their educational needs met. Adaptive instruction is facilitated through individualized progress plans, a diagnostic-prescriptive monitoring system, and a self-schedule system. The two components of the ALEM's individualized progress plans consist of a mastery of academic skills through a highly structured prescriptive learning component and an exploratory component that encourages social and personal development.

In the ALEM each child is provided an individualized program that is dependent on the child's strengths and needs Instruction is based on the student's curriculum needs, not on a categorical label Self-management skills are taught to allow the learner to take responsibility for his/her learning (Wang & Birch, 1984).

Effective implementation of the ALEM has led to positive academic and attitudinal outcomes Research indicates that academic achievement of students in the ALEM program is greater than that of similar students in self-contained special education classes. Decertification (removal of the handicapped classification) was recommended for about 30% of the mainstreamed students in ALEM classes, compared to only 3% of the students with similar special education classification in the self-contained special education context (Wang, n d). Self-esteem and social competence of the handicapped students in ALEM classes is reported as higher than that of students in self-contained special educa-

tion classes (Wang, n d.) Over time, major changes take place in classroom processes Some of these changes include peer interaction that is constructive, a high rate of on-task behavior, and an increased frequency of teacher-pupil interaction for instructional purposes (Wang & Birch, 1984).

Cooperative learning strategies. All members in the group reach a common goal together through working in a cooperative effort. Structuring the classroom to provide cooperative learning and playing experiences promotes social acceptance, whereas competitive and individual learning and playing experiences promote rejection and lack of acceptance (Johnson & Johnson, 1980; Johnson & Johnson, 1986; McGill, 1984)

> Cooperative learning should be used whenever teachers want students to learn more, like school better, like each other better, have higher self-esteem, and learn more effective social skills (Johnson & Johnson, 1986, p 554)

The four basic elements of cooperative learning experiences are positive interdependence, individual accountability, collaborative skills, and group processing (Johnson & Johnson, 1986). Small heterogeneous groups of children work together at their own pace and level to complete the group goal. The cooperative goal structure requires that students use collaborative skills such as leadership, decision-making, trust-building, communication, and conflict-management skills (Johnson & Johnson, 1986). The final element is an evaluation of how well the group worked together to achieve its academic goals

Heterogeneous grouping within the classroom. Grouping children into permanent ability groups disregards the students' individuality and uniqueness. Whether students are so grouped in a classroom or placed in a special class, the school system is perpetuating the *caste* system of the valued and devalued (Bartoli, 1986; Cochrane, Cochrane, Scalena, & Buchanan, 1985). In the holistic concept of language arts, teachers encourage learning through cooperative heterogeneous groupings (Bartoli, 1986; Cochrane et al., 1985). "It seems clear from the research that we should not be supportive of efforts to stereotype, segregate, label, and track children" (Bartoli, 1986, p 21)

Social skills training. Placing exceptional students in integrated settings does not guarantee increased social interaction or social acceptance (Gresham, 1982) Inadequate social skills in children result in a clear pattern of social acceptance-rejection (Strain & Kerr, 1981). Currently there is enough evidence to suggest that social skills training with exceptional children (Gresham, 1982; Madden & Slavin, 1983, Meyer, McQuarter & Kishi, 1985; Strain & Odom, 1986) helps them to interact more positively and become better accepted by their nonhandicapped

peers (Gresham, 1982; Madden & Slavin, 1983) The strategies employed to facilitate social skills training are peer tutoring (Strain & Odom, 1986), teacher modeling and peer modeling through use of film (Gresham, 1982), and instructional programming. In addition to modeling, Gresham (1982) includes manipulation of antecedents and manipulation of consequences as effective social skills training techniques In manipulation of antecedents nonhandicapped peers respond to students initiating play. Other strategies include role playing and acting out of familiar stories. Cooperative games also increase social interaction and peer acceptance. In manipulation of consequences, students displaying appropriate social behavior receive praise, or an appropriate reinforcement

Curriculum-based assessment. This instructional strategy (Galagan, 1985; Gickling & Thompson, 1985; Rosenfield & Rubinson, 1985; Tucker, 1985) is "a procedure for determining the instructional needs of a student based on the student's ongoing performance in existing course content" (Tucker, 1985, p. 200).

This strategy matches the curriculum to the students' skills allowing sufficient time for learning (Gickling & Thompson, 1985). Through curriculum-based assessment the individual differences of a more diverse student population can be met.

Ecological problem solving through consultation to regular teacher. Traditionally, educators focus on the child when a problem occurs. In the ecological problem-solving approach (Cantrell & Cantrell, 1980), the child is part of an ecosystem that requires an analysis of the interaction between the child and the environment Ecological discordance occurs when the child's skill level is above or below the expected demands made of the child in the environment. In the analysis of the problem the child's home, school, church, peer, and other environments are included in identifying the behavioral, academic, and other problems of the child. After the ecological discordances have been identified, the problem solving approach requires a mapping of intervention resources and strategies. To capture these decision-making procedures used by the professionals, flowcharting techniques are adapted Support teachers, extensively trained in ecological analysis and intervention, provide consultation and support to the regular teachers on an extended and continuous basis to support and maintain the exceptional child in the regular setting

This strategy has reduced the number of student referrals, resulted in higher student achievement and lower frequency of disruptive behavior as well as increased teacher ratio of praise to criticism (Cantrell & Cantrell, 1980)

The decision-making process. To maintain a child in the integrated setting when a problem occurs, whether it is academic or social, steps need to be taken to resolve the problem In the decision-making process the problem and the probable agents for change are identified (Heron, 1978). A resolution to the problem can be made by focusing on the child's behavior, the peer group's behavior, or the teacher's behavior If the child's learning environment has been personalized so that individual differences are accommodated through appropriate instructional strategies and the problem persists, then other probable change agents need to be investigated (Heron, 1978) Strategies used to increase and improve peer interaction can be an important change agent resolving the problem. Teachers also need to consider how a change in their behavior can be a solution for the identified problem.

Peer tutoring. Classwide peer tutoring increases the engaged time spent in learning and is a positive intervention strategy in improving student achievement outcomes (Delquadri, Greenwood, Whorton, Carta & Hall, 1986; Strain & Odom, 1986). Although peer tutoring has had positive effects with students having mild handicaps, the focus of peer interaction with students with severe handicaps should not only be that of teacher and caregiver, but should provide ways for partners of unequal status to interact in a reciprocal and complementary way (Brinker & Thorpe, 1984).

Integration facilitator. The integration facilitator (Ruttimann & Forest, 1986) intercedes between the child and the environment on behalf of the child with severe handicaps to promote social, developmental, and educational outcomes in school and in the community. Through the initiative of the integration facilitator, a close network of peers is built to share the responsibility of maintaining the child with special needs in the educational setting as well as interacting socially at school, at home, and in the community.

Class sponsorship. Another class sponsors a child with severe handicaps to participate in some of its school activities, special excursions, and special occasions (Brown, 1986).

Buddying. When students with severe handicaps are learning together with nonhandicapped students one of the strategies employed for increased social interaction is buddying (Stainback & Stainback, 1985; Taylor & Ferguson, 1985). A child with a handicap and a child without a handicap are paired for extracurricular and nonacademic activities

Children with Challenging Needs: An Integral Part of Effective Education

The ultimate goal in education is to have a unified, reformed, and restructured educational system that serves the unique needs of every

child and that enables the attainment of one's ultimate potential within every neighborhood school. The recent movement of applying the current knowledge base and research of effective education to reforming and reorganizing the school, the classroom, and instruction is pertinent to both regular and special education (Bickel & Bickel, 1986) It challenges the old assumption of the need of regular and special education. Stainback and Stainback (1984) have proposed a merger of general and special education to better meet the needs of all students. Three required changes to our school structure that would allow for more flexibility include "a nongraded grouping arrangement, variable pacing and time requirements for learning, and evaluation and programming based on individual student and achievement levels" (Stainback et al., 1985, p. 148) Within effective learning environments, instruction, program adaptations, and intervention strategies employed are dependent on individual learning styles and individual learning time. Integration can best be promoted within effective learning environments; as in schools and classrooms exemplary of effective instruction, the uniqueness and individuality of every child is respected. In effect it is not enough to lobby for integration, but policy makers, administrators, educators, advocates, and parents must be instrumental in creating effective education that increases academic learning time and promotes the development of the whole child within a flexible and adaptive system Continued stagnation and the perpetuation of an outdated mode of education can only perpetuate the underdevelopment of our human resources

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Idiots Savants: Retarded and Gifted

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Abstract

This paper reviews the paradoxical nature of idiots savants, persons who, although retarded, are also gifted. Their specific talents exceed those of normal individuals while in other areas idiots savants are deficient. Various explanations for the phenomenon are discussed, such as a specific genetic endowment, a specialized compensatory response to a general intellectual deficiency, and possession of an eidetic (photographic) memory. Various categories of exceptional skills are presented. Also described are the similarities between autistic children and idiots savants. The paper concludes with educational implications of idiots savants.

In the literature on mental retardation, there are references to intriguing cases of individuals who, although unable to manage their daily lives independently, are nevertheless capable of remarkable mental feats in specific areas of endeavor. Briefly described, an idiot savant has an extraordinary, specific talent, such as calendar calculating, a specialized musical skill, or an outstanding memory for specific information. The particular skill possessed exceeds that of normal people with training in that area, while in other areas the idiot savant is deficient. Such cases are very rare, approximately 0.06% of all institutionalized retarded (Hill, 1977). Their specific areas of expertise cover a wide range of human abilities.

The use of the term *idiot savant* presents problems as the individuals so labeled are neither idiots nor savants. *Idiot* is an archaic term which, in the early days of IQ testing, referred to IQs below 30. But few idiots savants actually test that low Duckett (1977), for instance, reported that 6 of 25 institutionalized savants had IQs below 40.

Referring to these retarded individuals as *savants* is similarly troublesome since, lacking a general perspective on life and an insight into their own abilities, they lack the wisdom implied by the term. Some authors favor descriptors such as *talented aments* (Scheerer, Rothmann & Goldstein, 1945) or *paraments* (Nurcombe & Parker, 1963), as being more precise in connotating the limited extent of the area of brilliance than *savant*.

In order to be identified as an idiot savant, the retarded individual's skills are judged against those of the nonretarded population, not

against those of retarded peers Furthermore, those skills much surpass, not only the norm for the general population, but also the standards achieved by normal individuals witn those particular skills. For example, a retarded individual who can play a recognizable tune on a harmonica would not be considered an idiot savant although most nonretarded people cannot do this. Only if the harmonica playing exceeds that of a proficient harmonica player would the term apply (Hill, 1978). Thus, idiots savants, though being retarded in their general intellectual functioning, are capable of performing at levels usually considered gifted in certain, specific skill areas. They can be defined as "mentally retarded persons demonstrating one or more skills above the level expected of nonretarded individuals" (Hill, 1978, p 281)

General versus Specific Abilities

The discrepancy in levels of functioning observed in idiots savants raises questions about the theoretical relationship between general abilities and specific talents, reminiscent of the wide-ranging debate between Spearman (1927) and Terman (1925) on the one hand, and Thurstone (1947) and Guilford (1967) on the other, about the pervasiveness of a general underlying factor in intelligence. Idiots savants appear to be clear examples of the argument that specific talents exist separate from general intellectual ability. Consistent with the view that specific talents can develop to a high level while other abilities remain deficient are multifactor definitions of giftedness such as that of Marland (1971): Children capable of high performance include those with demonstrated achievement and/or potential ability in any of the following areas: (a) general intellectual ability, (b) specific academic aptitude, (c) creative or productive thinking, (d) leadership ability, (e) visual and performing arts, and (f) psychomotor ability.

Within the context of this definition, a child does not have to excel in all areas to be considered gifted On the contrary, promise of actual achievement in only one of the itemized areas is sufficient to meet the criteria of giftedness. Furthermore, no lower limits of ability are stipulated in areas of non-giftedness. It seems possible to argue, then, that idiots savants, though retarded, are also gifted (Bergman & DePue, 1986). Some idiots savants, such as Japanese artist Yoshihiko Yamamoto, have indeed become famous for their outstanding work (Morishima, 1974)

Theoretical Explanations

Although the phenomenon of the idiot savant has intrigued professionals for a long time (many case studies are documented in the literature), relatively little is known about the organization or development of the exceptional abilities, or the nature of the mental functioning in-

volved. Various theories have been advanced to account for idiots savants. These explanations have included deficit-oriented as well as ability-oriented approaches (Hill, 1978). In the former, development of specific abilities is explained as a reaction to areas of deficiency such as lack of abstract ability (concrete thinking), impoverished environment (sensory deprivation) or retardation per se (compensation). In the latter, idiots savants are assumed to develop special skills as a result of their superior abilities, either inherited, or facilitatory (memory and concentration). Several theoretical explanations are discussed in the following paragraphs.

Concrete thinking. In a detailed case study of a 17-year-old male, Scheerer, Rothmann, and Goldstein (1945) documented that idiots savants are deficient in ability to deal with abstractions They hypothesized that, owing to this impairment, the abilities developed are concrete in nature, such as playing melodies by ear, calendar calculation, or arithmetic calculation. These concrete abilities are fragmented or canalized, and do not develop in the normal way.

Sensory deprivation. Hoffman (1971) attributed the unusual ability in mental calendar calculation of a 13-year-old retardate to the elimination or reduction of outer, interfering stimuli. In conditions of sensory deprivation, whether through confinement in an institution or through being in an abnormal psychological state, individuals create their own particular structures and interests, and through repetition, develop unique abilities. These unique abilities then stand out in the individuals' repertoires, and are encouraged further by others.

Compensation. Lindsley (1965) argued that the condition of mental retardation itself leads to the development of specific skills in certain areas. The individual compensates for a general intellectual deficiency by focusing primarily on a functioning mode to the exclusion of others.

Inheritance. Case study accounts of some idiots savants indicate that abilities in calendar calculation (Rosen, 1981), arithmetic calculation (Brill, 1940), and music (Viscott, 1970) develop spontaneously, without deliberate training on the part of parents of other adults. This development would suggest that special abilities of the sort exhibited by idiots savants are inherited.

Eidetic memory. A number of authors explain phenomenal memory for facts, dates, and so forth as being eidetic or photographic in nature. Roberts (1945) and Anastasi and Levee (1960) described individuals with superior memory for personal and historical events, and naming the day of the week for any date since 1915, respectively. The authors found it difficult to explain these feats of memory, except by assuming superior eidetic imagery from which the idiots savants could "read off" data.

Concentration Whenever individuals spend a great deal of time at an activity, they become proficient at it, and idiots savants are no exception to this. There are frequent accounts in the literature of idiots savants spending long hours absorbed in rehearsing their skill. For example, Morishima (1974) reported that a mentally retarded Japanese artist spent all day "sitting like a Buddha" at his work.

There is no consensus in the literature about which of the above theories best accounts for the idiosyncratic functioning of idiots savants. Each theory has been advanced on the basis of the intensive study of, at best, only a few individuals. Given the diversity of specific excellence among savants, it could well be that no one theory at present can account for all instances of the phenomenon, and that controlled empirical study of the abilities of subgroups of savants may be the precondition for development of a comprehensive multifaceted explanation to cover all cases.

Areas of Expertise

The abilities of idiots savants fall into a number of discrete categories. Some savants exhibit only one type of skill, while others exhibit several. In a survey of the literature, Hill (1974) found 52 reports of savants that he grouped into several categories:

1. *Calendar calculating.* This is probably the best known ability associated with savants. Typically, the individual can name the day of the week on which a specific date has occurred or will occur, or vice versa. The span of years covered varies. For instance, one subject could give the day of the week only for dates between 1900 and 2060 (Smith & Howe, 1985) while another had a range of at least 6,000 years (Horwitz, Kestenbaum, Person, & Jarvik, 1965).

2. *Artistic ability.* Several reports describe savants who have become famous for their artistic ability. Yoshihiko Yamamota for example, is known as "another Van Gogh of Japan" for his superior artistic and graphic skills (Morishima, 1974).

3. *Musical ability.* A number of savants have been so proficient musically that they have rehearsed or played with orchestras (Anastasi & Levee, 1960; Bergman & DePue, 1986). The range of musical ability shown by savants is quite variable and related to the amount and kind of training received.

4. *Memorization of obscure facts.* Savants often remember trivia such as phone numbers, people's birthdays, railroad car numbers and special events For example, Jones (1926) described a man who could give the population of every urban area in the United States

exceeding 5,000 people Viscott (1970) described a girl who had memorized entire pages of the phone book

5 *Mathematical abilities* Some savants are able to perform arithmetic calculations such as multiplication or square root more quickly than mechanical calculators can. The mathematical abilities are usually very specific. Brill (1940), for example, described a 13-year-old girl who was a whiz at multiplying and dividing but had difficulty with addition and subtraction

6 *Mechanical ability*. In these cases, the savants are able to work at mechanical tasks, but are unable to explain the processes involved. For example, Hoffman and Reeves (1979) described an institutionalized man who was able to repair appliances such as clocks, electric hot plates, and dishwashers, and build electrical circuits and devices such as lamps, but could not be assessed on tests of mechanical aptitude.

7 *Sensory discrimination*. This is the rarest and most questionable category and includes individuals with exceptional senses of smell and/or touch For example, Horwitz et al (1965), described twins who could pick out their own shoes and slippers by smell alone. Hill (1978) refers to anecdotal reports of savants who could split bond paper in two.

Relationship to Autism

Children who in the past were labeled idiots savants are now being increasingly absorbed into the category of autism or childhood psychosis While not all idiots savants have the behavioral manifestations of autism and not all autistic children the discrepancy between low general mental ability and high specific ability, there is recognition of a large area of commonality between the two diagnoses (Goodman, 1972) Frequently noted general similarities include impaired abstraction, social aloofness, eccentric mannerisms, islands of brilliance and male predominance (Steel, Gorman, & Flexman, 1984) A comparison of categories of exceptional abilities for idiot savants (Hill, 1974) and autistic children (Rimland, 1978) indicates that music, memory, art, mathematics, and mechanical abilities appear on both lists

Educational Implications

One of the basic goals of education is to develop a child's abilities to the fullest Often a specific talent may be the avenue for development of deficient areas or for developing a marketable skill Thus, with idiots savants there is an educational need to build up skills necessary for nor-

mal functioning as well as to develop specific areas of talent which may lead to a means of livelihood.

The highly specialized skills of savants reported in the literature have developed in most instances without specific training in unsupportive environments. Few attempts have been made to systematically nurture these abilities Where there have been concerted attempts to accommodate the special talents and to provide instruction to improve related skills, the results have been dramatic. A noted example of the positive effect of instruction is provided by Morishima and Brown (1977) in their case study of Shyoichiro Yamamura

Yamamura's attention span and memory were reportedly very poor, except for insects, which he could watch for hours Aside from observing insects, his favorite activity as a child was drawing pictures. He could understand others, but did not speak. His IQ was approximately 48-53

Between the ages of 11 and 19, Yamamura was placed with Motsugi, a special education teacher, who capitalized on Yamamura's interest by providing him with insect specimens and art materials, instructing him in observation skills, and allowing freedom in choice of activities At the age of 19, Yamamura was placed with another educator, Tsutsumi, who trained retarded persons at home. In addition to furthering Yamamura's interest in insects, he introduced him to new media such as finger painting, and taught self-care skills Under the tutelage of these two special educators, Yamamura learned to produce superior works of art.

This case study indicates that a retarded individual with a specific aptitude can be taught effectively through special instructional approaches by special educators. Morishima and Brown (1977) stress that specially trained teachers are the key in the development of the special talents of idiots savants. Their teachers not only should be aware of special educational programs and techniques, but also should be sensitized to look for areas of strength Without such sensitivity, and a systematic search for islands of talent among the retarded, many more cases of idiots savants might go undetected

Retarded in their general functioning but gifted in special areas, idiots savants need educational upgrading of learning deficits, at the same time as they need special programming to develop their special skills to the fullest Therein lie the paradox of idiots savants and the ultimate challenge to educators of exceptional children

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Teaching Ecologically-Based Communication Skills to Persons who are Developmentally D layed

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Abstract

The purpose of this chapter is to supply families and other direct service providers with a framework for the design, implementation, and evaluation of appropriate, effective communication instructional programs for persons who are severely developmentally delayed. Herein, the term "communication" includes symbolic and non-symbolic means of communication expression and comprehension as well as those social skills which are appropriate to independent performance in a variety of environments. The use of an ecological approach which incorporates the instruction of communication skills with that of activities of daily living (ADL) will be emphasized. The discussion of this approach will encompass the areas of assessment, choosing appropriate communication modes, curricula, and selected teaching strategies.

Teaching Communication Skills in Community-Based Settings

Introduction

Many persons who are severely developmentally delayed are capable of living independently in community-based settings Their success, however, will depend to some extent on their ability to independently access a variety of community environments (e g , stores, restaurants, theaters, concerts, churches) Success in these environments is due, in large part, to the communication and social skills of such persons It is therefore of the utmost importance that instruction in these skill areas be given high priority and that program and training issues be addressed in functional, environment-specific ways Using an ecological approach can help meet these objectives

Ecologically-based instruction (Brown, Branston, Baumgart, Vincent, Falvey, & Schroeder, 1979) is a relatively new training concept Until recently, special educators relied heavily on developmental models (Bricker & Dennison, 1978) and/or remedial models (Guess, Sailor, & Baer, 1977) for the design of communication curricula and instructional

programs The developmental approach emphasizes teaching prerequisite skills according to the sequence in which "normal" children learn language, while the remedial approach targets functional skills for initial instruction In general, developmental and remedial skill instruction have taken place in structured classroom settings. The ecological approach, on the other hand, stresses teaching functional responses in natural environments which are accessed frequently by the student Given the problems of persons who are severely developmentally delayed in generalizing skills acquired in structured and/or simulated environments to more natural, community-based settings, this can only be viewed as a positive change in the design of special educational assessments and program plans as well as in the choice of selected teaching strategies.

Assessment

An appropriate communication skills assessment should include the following:

1. Vision and hearing acuity examination;
2. Otolaryngeal examination;
3. Communication skills screening; and
4. Ecological inventory

Vision and Hearing Assessment - Introduction

Vision and hearing are primary input modes for communication, thus, accurate measures of acuity are crucial to the development of an appropriate instructional plan. For the most part, vision and hearing examinations are performed by an opthalmologist or optometrist and an audiologist respectively. In general, for persons who are severely developmentally delayed, these examinations yield gross measures of vision and hearing ability. However, the specific level of acuity remains in question. Typically, the problem lies in the fact that severely developmentally delayed individuals are unable to take tests developed for a "normal" population With the advent of behavioral technology, however, tests for this population have been developed and field-tested successfully. The use of the Parsons Visual Acuity Test (Cress, Spellman, DeBriere, Sizemore, Northam, & Johnson, 1981) and operant audiometry (Bricker & Bricker, 1970) have proven to be examples of effective alternatives to traditional tests and can yield more valid results These tests are based on the use of sophisticated shaping and fading techniques characteristic of errorless learning procedures

The following will provide a description of these tests. However, it is recommended that the appropriate references be consulted for a more technical description

Vision Assessment

A traditional vision acuity examination requires that the examinee stand 20 feet away from a letter or shape chart and read the figures to the examiner. Typically, persons who are severely developmentally delayed cannot label the figures nor understand the examiner's directions. The Parsons Vision Acuity Test (PVAT) provides an alternative by teaching the examinee to discriminate three figures, targeting one figure as the test response and allowing the examinee to use a pointing or match-to-sample response to the figures displayed 13 inches from him or her The size of the figures on the test cards simulate the 20 foot distance required by the traditional tests. In genera', this examination is performed by a special educator who is familiar with the examinee. The results of the examination are then shared with an ophthalmologist so that he or she can take the most appropriate corrective action. If corrective lenses are prescribed, the PVAT can be re-administered to determine the effectiveness of the prescription. Opticokinetic nystamus tests, evoked visual potentials, electroretinography, and simple refractive measurement are other methods of evaluation of vision useful with people with severe handicaps.

Hearing Assessment

Traditional hearing acuity tests require that the examinee wear earphones and respond to tones as presented by the examiner. Many persons who are severely developmentally delayed will not tolerate the earphones and do not understand that a response must be made when each tone is presented. The use of operant audiometry can be a potential solution to these problems This procedure involves desensitizing the examinee to wearing the earphones and conditioning an appropriate response to the tone The desensitization process requires that the examinee wear the earphones for increasing lengths of time with positive reinforcement being contingent on such behavior. This process may take quite some time and should be initiated in residential and school or vocational settings well in advance of the test date. Teaching the individual to make the appropriate test response involves pairing a lighted button with the tone presented through the earphones The examinee is initially reinforced for touching the button. Once this behavior is consistent, the light is then faded systematically and only responses to the tone are reinforced. Evoked auditory potentials, heart rate response audiometry, and impedence audiometry are among other methods useful for evaluation of the hearing of people with severe handicaps. Al-

though neither operant audiometry nor the PVAT can be deemed a panacea for testing persons who are severely developmentally delayed, they have both been proven to be effective with some members of this population.

Otolaryngeal Assessment

The purpose of an otolaryngeal examination is to determine the effectiveness of the oral-motor structures for the production of speech. It is recommended that an otolaryngologist (ear, nose, and throat physician) as well as a speech pathologist perform such an examination. Although the potential for speech should never be excluded, it is possible that a person may not have the capability to produce sounds due to physical impairment. Without such knowledge, educators may pursue this goal unnecessarily.

Communication Skills Screening

The purpose of a basic language/communication skills screening is to determine the current capabilities of the persons for whom a communication program will be designed. Such a screening should include (Williams & Fox, 1980):

1. Determining behaviors which interfere with learning;
2. Evaluating expression of wants and needs;
3. Observing and noting functional object use;
4. Evaluating motor and verbal imitation;
5. Recording ecologically-relevant noun/verb comprehension and expression; and
6. Evaluating instruction following

Because some persons who are severely developmentally delayed demonstrate erratic adaptive behavior, this screening should be replicated by familiar persons in familiar settings until a consistent behavior pattern can be determined. Realistically, a valid, reliable screening may take one to six months to complete. This process, however, does not have to delay the design and implementation of a program to teach a functional communication response, for example, indicating wants and needs. When the screening is completed, the results must be collated by the examiners in preparation for sharing them with those individuals who will make communication mode and instructional program decisions. In reality, many persons who are severely developmentally delayed will need instruction in some combination of speech, sign lan-

guage, and communication board use in order to live independently in community-based settings

The purpose of an ecological inventory (Brown et al, 1979) is to identify current and subsequent environments which are or will be accessed frequently by the student. In addition, skills which are important to independent functioning in such environments are delineated. Generally, the ecological inventory is conducted by the special educator who is responsible for generating an instructional plan for the student. This plan is known as the IEP (Individualized Educational Plan) in public school special education, the IPP, ISP, or IHP (Individualized Program, Service or Habilitation Plan) in mental health, or the IWRP (Individualized Work Rehabilitation Plan) in vocational rehabilitation. In essence, however, all service providers are talking about the same thing, namely, individualized instructional plans for persons who are developmentally delayed such that they can progress toward living independently in community-based settings. The ecological inventory involves an interview with a parent, guardian, and/or "significant" other(s) to determine their impressions of the most important and relevant skills to be targeted for instruction. Such skills are then prioritized for instruction and a plan for the incorporation of such skill instruction into the educational plan is determined.

Choosing Appropriate Communication Modes

Prior to the initiation of instruction, it is often necessary to determine the most appropriate communication mode for an individual Until recently, many persons who are severely developmentally delayed have been subjected to learning communication skills through the mode of communication which is familiar to the educator. In other words, many individuals have had vocal speech instruction in one program, sign language in another, and possibly communication board instruction in yet another. Given the need for coordinated, consistent instructional programming for such persons, there is no doubt that the parent/guardian and a team of special educational professionals must determine a "potentially" viable mode of communication for the individual.

Harris-Vanderheiden and Vanderheiden (1977) have identified appropriate considerations for making such decisions. Such considerations include:

1. Current communication modes;
2. Motivation to communicate;
3. Physical disabilities affecting input/output modes;
4. Audience;

5. Current and future educational/vocational needs; and
6. Amount and type of professional consultation needed to facilitate the success of the student.

Program decisions based on these considerations, however, should be supported by an interdisciplinary team model. Although many definitions of an interdisciplinary team model have been documented in the literature, one successful model can be identified with the provision of special educational services for individuals who are multi-handicapped in the public schools (Christie, Fox, Sousie, & Tucker, 1982). A major emphasis of this model has been for team specialists to train professionals at a local level such that they can provide the necessary on-site, on-going consultation and training to local educators/service providers The team can be comprised of the following individuals;

1. Direct service providers;
2. Educators with specific expertise in teaching individuals who are severely developmentally delayed;
3. Student (when appropriate);
4. Parent and/or guardian;
5. Speech/language pathologist;
6. Communication specialist;
7. Family physician;
8. Medical specialist (e g., neurologist, orthopedist, otolaryngologist, etc);
9. Physical therapist; and
10. Occupational therapist.

In order for this model to be effective, the direct service provider must be willing to receive training from team specialists, and the specialists must be willing to release some components of their traditional disciplinary roles to the direct service provider. Because of the blurring of traditional roles, this model is sometimes referred to as "transdisciplinary". Additionally, team program recommendations must be incorporated into a functional, daily life plan for the individual. As the direct service provider is primarily responsible for program planning, teaching, and evaluation of progress, it is ultimately up to this person to ensure that this occurs

Program Planning

Although a plethora of curricula for teaching persons who are severely developmentally delayed are currently available, the communication skills curriculum for an individual should be a natural outcome of the results of an ecological analysis. The remaining step is for the educator to delineate the vocabulary and social skills which must be mastered in order for the individual to engage independently in each activity within each environment specified in the instructional plan. Figure 1 provides an example of the use of this type of curricular planning.

In order for such programs to be successful, all individuals who work with the student should be trained to insure appropriate implementation. One way in which this can be monitored by a program supervisor is for this person to provide regular reliability checks for his or her staff.

Another important component of the curricular planning process is the specific instructional plan which will be implemented in order for the student to learn the communication/social skills. Such a plan must be individualized to the specific communication mode and learning needs of the student. A suggested instructional plan should include the following:

1. Instructional objectives to include conditions, behavior, and criteria:
2. Specific instructions for teacher cues;
3. Specific instructions for consequating correct and incorrect responses;
4. Specific instructions for consequating behaviors which interfere with learning, and
5. A plan for the generalization of acquired skills. Figure 2 provides an example of such an instructional plan.

Teaching Strategies

Halle (1982) identifies three training strategies which have proven effective for teaching communication skills. The most challenging and ecologically-oriented approach is that of incidental teaching. This approach necessitates that educators and families structure the environment such that the student must self-initiate a response before gaining access to a desired item and/or event. A typical example of the use of such an approach is that of placing highly reinforcing items out of the reach of a student such that he or she must emit a response (e.g.,

"I want....") before receiving the item(s) Naturally, this approach assumes that the student has such a response in his or her repetoire.

I. *Environment: Movie Theater*

II. *Subenvironment: Concession Stand*

Activity 1: Move to concession stand

Skill Cluster: a. Locate concession stand
b Approach counter or wait in line
c. Move ahead with line

Vocabulary/Phrases needed

-Where is the concession stand (candy counter)?
-Please/Thank you
-Excuse me

Social Skills needed

- Walking quietly (no vocalizations/verbalizations above a conversational level)
-Asking for assistance at an appropriate distance (one arms's length) and making eye contact
-Waiting in line quietly (as defined above)

Activity 2: Purchase Item

Skill Cluster: a. Scan available items
b. Request item
c. Pay cashier
d. Receive item
e. Take change (if appropriate)
f. Move away from stand

Vocabulary/Phrases needed

-May I have a _____?
-Please/Thank you
-Names of available items
-Yes/No
-How much is a _____?

Social Skills needed

-Requesting an item at a conversational voice level
-Being polite (using please, thank you, excuse me, when appropriate)
-Moving away from stand slowly (not bumping into others unnecessarily)

Figure 1

STUDENT _____ INSTRUCTOR _____ SKILL _____ LOCATION _____ INITIATION _____

INSTRUCTIONAL OBJECTIVE

Conditions	Behavior	Criteria
Given a concession stand at a movie theater and the desire for a displayed item	The student will a. scan available items, b. request item; c pay cashier, d receive item, e take change (when appropriate), and f move away from stand	Independently within three (3) minutes using an acceptable communication mode (verbal language at a conversational level, sign, or communication board) such that the vendor understands the student and the requested item is received on each occasion within three (3) months of program initiation

Program set-up	Definition: correct response(s)	Consequences: correct response(s)	Definition: incorrect response(s)	Consequences: incorrect responses
E: Student-initiated; Student has a desire for an item at the concession stand provided he or she has been exposed to the stand on prior occasions.	Student will: a scan available items b. request item c. pay cashier d receive item e. take change (when appropriate) f move away from stand	Phase 1: Teacher provides social praise for each step performed correctly Phase 2. Teacher provides social praise for every 2 steps performed correctly consecutively. Phase 3 Teacher provides social praise on a variable schedule of reinforcement.	Student does not perform the step or does so incorrectly.	Utilize levels of intervention (LOI) training 5 - independence 4 - verbal cues 3 - modelling/gestures 2 - partial assistance 1 - full assistance
			Definition: competing behaviors	**Consequences: competing behaviors**
			Student vocalizes at a decibel level higher than that of normal speech	1. Student is verbally reminded of his or her behavior. Student is reoriented to the present environment 2. If the behavior persists, the student is escorted out of the theater, returns home and loses the opportunity to see the movie.

Figure 2

Should this not be the case, then a mand-model approach can be employed to teach the basic response.

The mand-model approach necessitates the use of teacher-initiated cues to elicit responses and provision of correction procedures for errors. This approach may be the most commonly used in "regular" public school education. A typical example is for the teacher to initiate an interaction with the student (e.g., teacher displays a picture, points to it and asks, "What is this?" Correct responses are reinforced and incorrect responses are usually consequated by error correction procedures. By its very nature, this approach allows the student to err and necessitates further cuing. This can be confusing for a person who has great difficulty learning; however, this approach has been suggested for teaching new responses.

Another effective approach to teaching new responses to individuals who can imitate and match-to-sample is that of time delay (William J. Keogh, personal communication, 1980). This is an errorless training procedure which results in a transfer of stimulus control from teacher-initiated cues to student initiation of the appropriate response. One example of the use of such an approach is teaching noun comprehension to a student who has the ability to match-to- sample. This procedure involves presenting two stimuli and requesting the student to identify one of such stimuli. Initially, the teacher immediately presents a sample of the item which corresponds to the correct response. Given that the student can match-to-sample, it is likely that he or she will respond by pointing to or touching the correct item. If this is not the case, physical prompting may be necessary. Once the student is reliably responding to the correct item, the teacher then systematically delays the presentation of the sample to the point where the student makes a response before the presentation of the sample. At that point, the teacher provides positive reinforcement for correct responses and employs appropriate correction procedures for incorrect responses.

A major drawback to traditional communication skills training is that skills have been taught frequently in isolated settings (e.g., therapy rooms, classrooms). These skills most likely will not transfer from these settings to the natural environment. The ecological approach, on the other hand, necessitates training within the context of natural settings. In this regard, Wulz, Myers, Klein, Hall, and Waldo (1982) have defined an unobtrusive training model which epitomizes the use of an ecological and incidental approach. This model stresses the importance of teaching functional, environment-specific responses in brief, incidentally oriented training sessions. The approach differs from the type of intensive training models which were designed for parents wherein they were asked to provide daily, data-based instruction for children who were

severely developmentally delayed This type of training can take a great deal of time during which there may be other siblings in the family who are in need of attention. In addition, this model stresses the importance of including other family members in the training by increasing the total number of interactions between family members and the child, thus increasing training opportunities and teaching parents and siblings to recognize the communicative behavior of the child

Summary

The primary purpose of this paper was to emphasize the importance of ecologically-based communication skill assessment, instruction, and individual progress evaluation for persons who are severely developmentally delayed. There is no doubt that such skills are fundamental to the assimilation of such persons into "normal" society.

Additionally, the content presented can provide a training model which can enable special educators to teach families and other direct service providers to teach communication skills to such persons. Given that these individuals can best utilize an incidental teaching approach which emphasizes training in natural environments, it is of the utmost importance that they receive such training.

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Stress and Supports to Families with a Handicapped Child

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Abstract

Despite the proliferation of Early Intervention Services in both the United States and Canada, there is evidence to suggest that families with a handicapped member continue to experience significant levels of stress. This paper explores the impact of child variables, parent variables, and family resources (professional and informal supports) on the family's ability to cope with a child with special needs. A model of family adaptation proposed by McCubbin and McCubbin (1987) is discussed in terms of its applicability to families with a handicapped child.

Evidence has been accumulating that families with handicapped members are experiencing significant levels of stress in coping with their child's special needs (Crnic, Friedrich & Greenberg, 1983; Guralnick & Bricker, 1987). This has occurred despite the assistance received from early intervention services (Blacher, 1984; Crnic et al., 1983).

Typically, evaluations and analyses of early intervention services have assessed the impact of family support on the child's development, the child's interaction with his or her family, and changes in the environments experienced by the child (Casto & Mastropieri, 1986) However, these analyses have seldom examined the family's perceived stress and coping efforts as these relate to the child's handicaps In addition, the child and family continue to be examined from univariate perspectives (for example, parent-child interactions, child communicative competence). The relevant variables have seldom been explored in combination from a multivariate perspective

This paper will focus on the child, parent, and family resource variables that may affect stress in families with a handicapped child. A model of family adaptation proposed by McCubbin and McCubbin (1987) that incorporates these variables from a multivariate perspective is reviewed. It is proposed that this model may provide a framework for understanding stress and coping in families with a handicapped child.

Stress in Families with Handicapped Children

There is evidence to support the view that families with a child who is handicapped experience more stress than families with typical children (Breslau, Staruch, & Mortimer, 1982, Holyroyd & McArthur, 1976; Tavormina, Boll, Dunn, Luscomb, & Taylor, 1981) Burdens on the family, in addition to those associated with raising nonhandicapped children, may include: an inordinate amount of time spent on daily care needs of the child including ongoing medical care; increased financial responsibility for specialized equipment, transportation and so forth; difficulties in arranging respite and vacations; and ongoing, often intensive interactions with a variety of professionals. Blacher (1984) has stated that the child with special needs may have a negative effect on some or all of the following: the marital relationship, sibling relationships, relationships with friends and relatives, and planning daily activities or family vacations

Despite the potential difficulties, some families appear to adapt surprisingly well without adverse effects on the well-being of the individual family members or overall family functioning (Beavers, Hampson, Hulgus, & Beavers, 1986; Friedrich & Shaffer, 1986). There is a growing interest in isolating variables related to stress in families with a handicapped member in order to help professionals understand why some families cope well and others do not A brief review of a selected sample of these studies is discussed in terms of child variables, parent variables, and family resources

Child Variables

Current research has identified a number of significant child variables that may affect family stress and coping These include child gender (Bristol, 1979, as cited in Bristol & Schopler, 1983): birth order (Farber, 1960); severity of the child's handicapping condition (Bradshaw & Lawton, 1978); degree of child dependency and degree of responsiveness to parents (Holyroyd & MacArthur, 1976); extent of attachment and age of the child (Blacher, 1984); and presence of behavior and social problems (Chetwynd, 1985). In addition, the quantity and quality of parent-child interactions have been examined (Marfo & Kysela, in press)

These variables seem to be involved in the stress profiles which families exhibit, but in complex and ambiguous ways. For example, Holyroyd and McArthur (1976) found that parents of the more severely handicapped children experienced the greatest degree of stress. However, other investigators (Bradshaw & Lawton, 1978) found that the severity of the child's handicap was not as critical as personal parental characteristics.

There is a need to assess more thoroughly each dimension of the child's interaction with parents in order to obtain a complete analysis of influential variables affecting family stress and functioning Factors such as severity of handicap, degree of responsiveness, and extent of attachment should be assessed individually and conjointly, and their mutual involvement in family stress should be examined in a multivariate model

Parent Variables

In addition to the variables associated with children and their special needs, researchers have also examined a number of parent variables that could potentially affect family stress level. A significant set of factors affecting parental and family stress requires exploration Parent variables include education level and socio-economic status (Segal, 1985); parental attitudes toward and perceptions of their child's development and special needs (Newberger, 1980; Sameroff & Feil, 1985); parental age and family size (Ragozin, Basham, Crnic, Greenberg, & Robsin, 1982); number of parents in the home (Beckman, 1983); and the type and quality of personal and professional supports the family experiences (Dunst, Trivette, & Cross, 1986; Schilling & Schinke 1984).

There is much conflicting information regarding the importance of each of the parent variables identified above. Perhaps the most important factor is not any one of these variables, but how the parents perceive their particular situation (Bandura, 1977; Lazarus & Folkman, 1984). For example, Bradshaw and Lawton (1978) found that mothers' appraisal of their home situation was more important in determining level of stress than other variables such as child characteristics. There is a need to obtain a better understanding of the interaction of these personal variables with the family's ability to cope with the handicapped family member

Family Resources

The existence of adequate family resources in terms of social support is a major factor in determining the capacity of parents to cope with their child with special needs (Dunst et al , 1986; German & Maisto, 1982). Family resources may be examined both in terms of formal, professional supports and informal support networks.

Professional supports. It has been suggested that although professional support is important to families with children who are handicapped, it does not always serve to decrease family stress level. In fact, in some situations, the professionals may actually increase the overall stress in the family (Becker, Bender, & Kawahe, 1976; Turnbull & Winton, 1983; Wiegerink, Hocott, Posante-Loro, & Bristol, 1980).

Early Intervention Programs are often a primary source of support to families with a handicapped child. Program variables that may affect family stress include extent of expected program involvement by the family, service delivery mechanism (e.g., home- versus center-based program), and program philosophy (e.g., structured versus unstructured didactic approaches, mainstreamed versus specialized learning environments) (Kysela, McDonald, Reddon, & Gobeil-Dwyer, in press). Preliminary research indicates that parents may experience stress when their expectations regarding an appropriate program for their child do not match the actual program that is provided by the professionals (Benson & Turnbull, 1986).

Two other variables that may affect stress are perceived competence of the professionals by the parents, and the values and attitudes of the professionals (Brown, 1971; Reisinger, Ora, & Frangia, 1970). Again, difficulties arise when there is a discrepancy between the parents' expectations or preferences and the actual situation encountered.

Informal supports. Informal support may be just as important or more important than professional support (Dunst et al., 1986; Granger, 1983). Informal supports may be provided by neighbors, friends, extended family, and church groups, to name just a few. The attitudes and values of others not directly involved in the family's program may have an effect on the family stress level. For the same reasons stated above, an individual may decrease or increase a family's level of stress depending on the match of attitudes and values with those of the parents. For example, support from family members, extended family, intimate friends, and/or friends seems to be related to low levels of stress exhibited by the family (Dunst et al., 1986; Granger, 1983). However, it is likely that the absence of supportive or discouraging attitudes toward the handicapped child by these significant others will adversely affect the family's coping and stress levels.

A final variable which has received little attention is the effect of the birth of a child with a handicap on siblings. Some studies have found increased behavioral and/or psychological problems in siblings (Seligman, 1975), whereas others have found little evidence of a negative impact (Gath, 1972). This is clearly an area where more research is required.

Need for a Family Systems Approach

Historically, researchers have dealt with a restricted set of independent and dependent variables when studying families with handicapped children and have not taken into account the interaction of the variables previously mentioned. It is no longer appropriate to focus exclusively on the stress reactions of one family member or to look at the effect of a single variable on the family's ability to cope. For example, there is evidence to suggest that mothers and fathers react differently

to the birth of a handicapped child (Schilling, Schinke, & Ki tham, 1985) Furthermore, families may react differently to the presence of a handicapped member depending on the particular stage that the family is in (Olson, McCubbin, Barnes, Larsen, Muxen, & Wilson, 1983).

A multivariate approach to the study of families and stress is required so that stress may be viewed in the context of the family system existing within a larger social system. Perhaps there are many conflicting research results because of the narrow focus of many of the studies.

McCubbin and McCubbin (1987) have provided a model of family adaptation that has the potential for enhancing our understanding of the way in which families function in the face of the chronic long-term stressors inherent in raising a handicapped child. The aim of the "T-Double ABCX Model of Family Adjustment and Adaptation" is to provide a model which will not only be able to predict the degree of disruption in functioning that a family is likely to experience in the face of a particular stressor event or change in the family system, but also the family's capacity to adapt and achieve a new balance in functioning after a major disruption or crisis occurs.

The first stage of the model is the pre-crisis Adjustment Phase and it is concerned with those family "types, strengths, and capabilities" which explain why some families are better able to adjust to relatively minor changes, transitions, or demands which do not require major alterations in family functioning For example, a family may experience a minor shift in patterns of behavior as a result of changing from a two-car family to a one-car family.

The second stage of the model is called the Adaptation Phase. This phase is concerned with the family's ability to cope over time with a major event requiring family reorganization and adaptation. In other words, this phase focuses on the family's ability to recover from a crisis situation and achieve a new balance.

The Adaptation Phase of the model is the most important component in helping professionals understand the impact of the birth of a handicapped child on the family. The birth of a handicapped child may create a crisis situation that will never be resolved, thus requiring continuous adaptations on the part of family members The family's ability to adapt to the crisis situation (the birth of the handicapped child) is a function of the family's regenerativity. Family regenerativity is in large part determined by a number of interacting variables including: the pile-up of demands on the family system (stressors, strains, and hardships experienced by the family at any point in time emerging from individual family members or from the community); family type or typology (predictable patterns of family life that are expected to influence family response to a crisis situation); family strengths and

resources (including tangible resources such as income, as well as intangible resources such as self-esteem); social supports available to the family including extended family, friends, and community resources; the family's appraisal of the crisis situation; and the family's problem solving and coping resources that have been used during previous crises. All of these variables interact and, in large part, determine how effectively the family will cope over time with the birth of a handicapped child.

This model may be a useful framework for conceptualizing the process by which families adapt to the chronic stressors inherent in raising a child with special needs. While many variables which have been associated with family members' increased vulnerability to stress (e.g., severity of handicapping condition, increased financial demands, lack of respite care) have been identified in the literature on handicapped children, there still lacks a coherent picture of how some families are able to manage surprisingly well in the face of overwhelming demands, while other family systems experience considerable disruption. This may be attributable to a failure on the part of researchers to take into account the dynamic interplay between the nature of the demands facing the family at any point in time, including those not directly associated with the special needs of the child, and the family's capability (appraisals, resources, coping strategies) to meet those demands. This model looks at both the demands facing the family as well as the family's strengths and capabilities for meeting these demands.

Summary

There is a good deal of conflicting literature in the area of stress and families with handicapped children. Part of the problem may be the need for more research applying a multivariate approach to the study of family stress. This approach takes into account the family as a system that is part of a larger social system. The model proposed by McCubbin and McCubbin (1987) allows researchers to take a more comprehensive view of the interactions of variables which may contribute to family stress and coping. If researchers and professionals have a better understanding of the variables affecting stress in a family, they may be in a better position to help families cope on a long-term basis with a child with special needs

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Adjustment of Families with Handicapped Children[1]

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Abstract

This paper presents an overview of data from several phenomenological studies of families with mildly to severely handicapped children. The central themes of the parents' experiences are listed, and comparisons are made of common and unique themes across various types of handicapping conditions. Families of handicapped children often face unique problems adapting to the presence of a handicapped child. When attempting to work with these families, professionals are faced with a shortage of knowledge and understanding about the topic because families of handicapped children are a relatively recent subject of investigation (Gallagher, Beckman, & Cross, 1983). In a recent review of related literature, Gallagher et al. reported that families of children with handicaps experience severe stresses, including financial and marital. The nature of the handicapping condition, the educational level of the parents, the socioeconomic level of the family, the presence of one or two parents and siblings, and the nature of the child's educational program have all been implicated as possible sources of stress.

The series of studies summarized in this paper explored the nature and severity of children's handicapping conditions on family adjustment. The goal was to increase understanding of the parents' experience, with a focus on educational and daily living adjustment of the child and their impact on the family.

The handicapping conditions studied included (a) learning disabilities (six families of LD children, aged 10 to 15); (b) moderate mental handicaps (10 families of MMH adolescents); (c) hearing handicaps (5 families of HI adolescents); and (d) severe mental handicaps (10 families with MDH children from 6 years of age to adolescence).

Parent volunteers, contacted through community programs or parent support groups, were interviewed alone or in couples. The parents were asked to describe their experiences of parenting a handicapped child; the interviewer minimized further direction and probing. All interviews were tape- recorded, and parents were assured of confidentiality. Data were analyzed in terms of the predominant themes of

parent concerns. These themes are listed below. Analysis of interview protocols to determine the dominant themes used Colaizzi's (1978) six steps for phenomenological research. The form of theme presentation varied somewhat from study to study according to each researcher's style.

Central Themes: Families of Learning Disabled Children

1. Something is wrong with my child—but what? For example, there was a constant round of running to clinics, having tests done, living in agony waiting for results; "She (teacher) insisted he was just lazy and uncooperative."
2. I'm just the parent (no credibility status). For example, "I feel so invalidated by teachers and principals"; "I'm sorry they (teachers) can't credit parents with knowing anything."
3. The school, the teacher, or "the system". For example, "They aren't taking any action to help my child"; "She (the teacher) had 34 kids and she didn't have time enough, you know."
4. Support systems: teacher, mate, learning disabilities association. For example, "It was very frustrating to have these kiddies that weren't learning anything, and not knowing where to turn to get the support"; "and the staff there just went out of their way."
5. General and specific frustrations. For example, "I don't know what to do for this poor kid; the child is frustrated; he's going to get lost in the system; I hurt because I see my child hurt"; lack of teacher awareness of learning disabilities.
6. Self-esteem: child's self-esteem is low; self-esteem grows with small successes in the resource room. For example, "Oh yes, he spent such a long time feeling totally worthless, unworthy of anything."
7. Social stress/peer stress. For example, "Kids can be so cruel (teasing)."
8. Parent as teacher. For example, helps child at home; gets frustrated with child's disability when teaching at home; "I think most work that has come home ... either one or the other of us has been able to help him to some degree."
9. Parents as advocates. For example, "going to bat" for child's education; "It could have been ... a lot worse if he hadn't had parents that were willing ... to be advocates for him."
10. Perseverance is the key. For example, no quitting; "We never let him say, 'I can't do it.'"

Central Themes: Families of Moderately Handicapped Children

1. Recognition that "something was wrong," and confusion as to cause, with a need to explain "why."
2. Uncertainty about the nature of the child's difficulties, with lack of knowledge or understanding of any assessments.
3. Problems in seeking and finding appropriate placements and resources.
4. Parent determination, initiative, and involvement in the child's education.
5. Over the school years, there has been progress, but not enough; life, career education, language and academic skills have been inadequately developed.
6. Family and neighborhood relationships are basically good; the TMH child is well liked, but friendships are few; hobbies and recreational interests are few; interest in the opposite sex is limited.
7. Parental fears and concerns for the future of their TMH adolescent are many.

Central Themes: Families of Hearing Impaired Children

1. Personal development of mother: in decision-making capacity; in career (paid work and homemaker) and volunteer activities; in advocacy-parent groups; fighting for services. Roles: mother, teacher, advocate, supporter; with increased assertiveness, confidence, maturity, and self-esteem.
2. Strong emotions regarding the child: a strong emotional bond; a sense of pain and of the "burden" of the child; resurfacing emotions with fluctuations in intensity.
3. Parents have ultimate responsibility for the child and services.
4. Support and/or lack of support for mother from spouse, other children, relatives, friends, and professional people.
5. Independence/dependence of child: a continuing issue; successful independent living of the child is a goal.
6. Parent-professional relationships: the *individual* in the role makes the difference in the interactions of parents a. d professionals.
7. Programs: facilitating/nonchallenging; the ideal doesn't exist; parents have a limited role and decision making power;

mainstreaming has resulted in facilitating/nonfacilitating experiences.

8. Family relationships: spousal; hearing impaired child with other family members; parents and siblings; there have been both positive and negative effects of having a handicapped child.

9. Communications: methods used and their success; interest in sign language; communication is, for the most part, fluent.

Central Themes: Families of Multiple, Dependent Handicapped Children

1. Mothers generally feel that the presence of the child in the family has been the single most dominant and long-term influence in their life-pattern following the child's birth; care-giving demands are very high and often increase with the child's age.

2. The participating parents had strong feelings (negative or positive) about the quality of assistance given to their handicapped child or themselves by the various professionals or social agencies they have come in contact with.

3. The parents expressed a great deal of concern and apprehension about the long-term future of their severely and multiply handicapped child; what will happen to their child when they (the parents) can no longer act as primary caregivers?

4. Parents experienced ongoing stress and anxiety that appeared to relate to circumstances, for example, care-giving demands and problems with professionals.

5. The presence of a severely and multiply handicapped child in the family had a very significant effect on the other family members; many parents felt that other siblings had frequently missed out on parental attention because of the needs of the handicapped child.

Conclusion

Many limitations of the studies reported prevent one from drawing definitive conclusions from the findings. The samples were small As well, the various projects were conducted and analyzed by different interviewers and researchers. Themes were identified and organized in different ways. In addition, because the data were from unstructured parent interviews, parents may have been selective in the aspects they reported and emphasized. For example, they may have focused on most recent or most stressful events. Nevertheless, some trends are evident and worthy of consideration and further study.

It is apparent that these families, over the entire range of handicapping conditions, experienced some confusion regarding the nature and

extent of the handicapping condition. However, the more severe the condition, the less ambiguous the diagnosis, although this does not necessarily hold for the treatment or course of action. Indeed, for all handicapping conditions there are some feelings of parental helplessness and feelings that the schools, social service agencies and, in general, support systems are not sufficiently facilitating and could be doing more. The presence of a handicapped child requires parents to assume a strong role as advocates. A handicapped child has a strong impact on family relationships, both positive and negative. For moderate to severe mental handicaps, greater fears for future adjustment and care were expressed, whereas for families with hearing impaired children communication was a central concern. Diagnosis was a major concern of families with learning disabled children.

Thus for professionals working with families having a handicapped child, there are general and specific concerns warranting sensitivity and support. While all of the themes may not be relevant to specific families, professional awareness may serve to alleviate some of the parent-professional ambiguities and potential areas of conflict by allowing development of a mutually supportive parent-professional partnership.

Note

1. An earlier version of the paper was presented as three posters at the Severe and Multiple Handicaps: Alternative Futures Conference, Edmonton, Alberta, May 1987. The data describing the families with moderately handicapped children have been added from an earlier paper (Wilgosh, 1985). The project was partially funded by a grant to the first author from the Alberta Advisory Committee for Educational Studies

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