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ABSTRACT

A survey of 312 teachers and families of students with severe disabilities in California, Colorado, Kentucky, Utah, and Virginia was designed to measure the extent of implementation of 12 educational "best practices" and the level of demonstration of 7 student outcome variables. The educational practices included: integration into school and family activities, integration into community recreational activities, functional educational program, data-based instructional programs, community-based instruction, transdisciplinary model, teacher integration, program reflecting respect for students, teacher inservice training, teacher education, teacher experience, and principal involvement. Additionally, three demographic variables--the type of community, family socioeconomic status, and the age of the student--were included as factors which may be strongly associated with student performance. Student outcome variables included social skills development, communication skills development, positive affective demeanor, percent of Individualized Education Program objectives achieved, level of independence, positive nondisabled peer attitude, and positive parental expectations for their child's future. Results of a series of multiple regression analyses indicated that a single program variable, the degree to which students were integrated into school and family activities, was significantly associated with each one of the high priority student outcome variables. (Contains 41 references.) (Author/JDD)

Educational Practices in Integrated Settings Associated with Positive Student Outcomes[1]

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Abstract

A study, using survey methodology, was conducted to investigate the relationship between educational practices in integrated settings and positive student outcomes. Three hundred and twelve teachers and families of students with severe disabilities from five states completed questionnaires designed to measure the extent of implementation of twelve educational "best practices" and the level of demonstration of seven student outcome variables. Additionally, three demographic variables--the type of community, family SES, and the age of the student--were included as factors which may be strongly associated with student performance. The results of a series of multiple regression analyses indicated that a single program variable, the degree to which students were integrated into school and family activities, was significantly associated with each one of the high priority student outcome variables including social and communication skills development, positive affective demeanor, the percent IEP objectives achieved, level of independence, positive nondisabled peer attitude, and positive parental expectations for their child's future.

Educational Practices in Integrated Settings Associated with Positive Student Outcomes

A substantial body of research has documented the beneficial effects of integrated education for students with severe disabilities. Integrated education has been associated with such high priority student outcomes as the acquisition of social and communication skills (Cole & Meyer, 1991; Kohler & Fowler, 1985; Giangreco & Putnam, 1991; Brady et al., 1984; Breen, Haring, Pitts-Conway, & Gaylord-Ross, 1985; Cole, 1986; Cole, Meyer, Vandercook, & McQuarter, 1986; Haring, Breen, Pitts-Conway, Lee, & Gaylord-Ross, 1987; Hunt, Alwell, Goetz, & Sailor, 1990; Strain & Odom, 1986), the display of more positive affect (Park & Goetz, 1985), increased achievement of IEP objectives (Brinker & Thorpe, 1984; Wang & Baker, 1986), greater levels of independence (Anderson & Farron-Davis, 1987; Freagon et al., 1985), improved attitudes toward peers with severe disabilities (Donaldson, 1980; Fenrick & Peterson, 1986; Haring et al., 1987; Sasso, Simpson, & Novak, 1985; McHale & Simeonsson, 1980; Voeltz, 1980, 1982), and more positive parental expectations for their child's future (Anderson & Farron-Davis, 1987; Hanline & Halvorsen, 1989; DREDF, 1985).

A number of educational "best practices" have been described and investigated in an attempt to identify factors that may be present in integrated programs that might promote positive student outcomes such as those described above (c.f., Halvorsen & Sailor, 1990; Meyer, Eichinger, & Park-Lee, 1987). These practices include the degree of physical and social integration of the students with disabilities into the activities of the school and community (Brinker, 1985; Murray-Seegert, 1989, Meyer et al., 1987) and state-of-the-art educational strategies such as functional, generalized skill development (Sailor, Goetz, Anderson, Hunt, & Gee, 1988), systematic, data-based programming (Sailor & Guess, 1983; Snell, 1987),

community-based instruction (Brown et al., 1979; Hamre-Nietupski, Nietupski, Bates, Maurer, 1982), and the use of a transdisciplinary model for the provision of ancillary services (Giangreco, 1986; Goetz & Gee, 1987; Gee, Harrell, & Rosenberg, 1987). Best practices in integrated educational programs also include principal and special education teacher-related behaviors such as the degree to which the principal is involved in the special education programs in the school, the extent to which the special education teacher participates in general education activities, the degree to which the teacher interacts respectfully and positively with his or her students, and the teacher's level of education, inservice training, and experience (Murray-Seegert, 1989; Stetson, 1984; Meyer et al., 1987; Fredericks, Anderson, & Baldwin, 1979; Wang, Vaughan, & Dytman, 1985).

However, much of the "best practices" literature is sporadic and highly theoretical, with relatively few published studies using anything but very small samples in highly restricted circumstances. The purpose of the present study was to provide a preliminary investigation of the relationship between educational practices and positive student outcomes using research methodology that included large samples, three hundred and twelve students and their families and 104 teachers from five states, and a broad range of educational practices and student outcome variables. The results would be valuable in the development of guidelines for prioritizing training and technical assistance activities and would highlight educational program areas that warrant continued research efforts.

Method

Participants

The participants were the teachers and parents (careproviders) of students with severe disabilities who lived in the states of California, Colorado, Kentucky, Utah, and Virginia. The majority of the participants had taken part in a survey

study conducted in the previous year designed to identify factors associated with the integrated educational placement of students with severe disabilities (Hunt et al., 1991). The original sample included the parents and teachers of students who attended both segregated special schools and integrated programs located on general education campuses. The participants in the present study represented a subsample of parents and teachers of students who attended the integrated programs only.

The original sample represented a random (with one exception) sampling of local and/or cooperative school districts within the five states. The Los Angeles Unified School District was deliberately selected because of its size (larger in pupil count than some individual states) and because of idiosyncratic features that result from its size. The number of districts or cooperative district arrangements selected was determined by an estimate of the number required to achieve a targeted sample size.

Directors of special education from each cooperative or school district selected were contacted to elicit their cooperation in the implementation of the first study. Special education administrators (i.e., program supervisors), identified by the directors were asked to randomly select a specified number of teachers to serve as members of one respondent group, with equal representation of segregated and integrated programs whenever possible (the total sample across states included equal representation of integrated and segregated programs). It should be noted that the assumption of randomness in sample selection was constrained by several factors. While some administrators followed the direction for random selection of teachers, other administrators asked for volunteers; and even in those cases in which a random selection was made, teachers who responded to surveys always did so on a voluntary basis.

Finally, for the original sample, participating teachers were asked to randomly select three parents in their class to be members of a second respondent group.

Compliance by teachers with the request for random selection could not be ascertained and exists as further potential constraint on randomization as a control in the design of the study.

The teachers who participated in the first study and whose program was located on a general education campus were asked to complete a second survey for the present study. Additionally, they were instructed to distribute surveys to the three families in their program who completed questionnaires in the first study. If students had graduated or moved out of the district or parents did not want to participate in this second survey, teachers were asked to select another student in their program who matched the original participant by age ($\pm$ 2 years) and level of disability.

Instrumentation

As described above, surveys were administered to two groups of individuals: special education teachers and three families of students with severe disabilities who attended each of the selected programs. The surveys were designed to measure the extent of implementation of twelve educational "best practices" and the level of demonstration of seven student outcome variables. In addition, the data from three questions on the survey for the first study were included in the analysis for the present study. These questions provided demographic information related to each of the participating programs which may have been strongly associated with student performance. The demographic variables included the type of community, family SES, and the age of the student.

The most common format for each survey question was an ordinal scale rating of the degree to which a variable was perceived to be present. In most cases a number of items were designed to measure a single variable. Table 1 lists each of the educational practice and student outcome variables investigated. Also presented

is the type of information sampled for each factor and the designated respondent group (i.e., teacher and/or parent).

Insert Table 1 about here.

A single questionnaire was designed for parents. Two questionnaires were developed for teachers: one designed to measure variables related to general program characteristics and a second which measured variables related to specific characteristics of the three students who participated. Teachers completed one "general" survey and three "student-specific" surveys (one for each participating student).

Procedures

Design. The research approach was an associative-correlational one; therefore, a large sample regression model was selected for the statistical analysis (Kerlinger & Pedhazur, 1973).

Survey implementation. The first draft of the questionnaires were submitted to representatives of the project advisory board and the on-site review team. Reviewers were asked to provide feedback on both content and format. Revisions were made based on reviewer input.

Survey packets were sent to each participating teacher with instructions for dissemination to the three families participating from their program. Two to three postcards prompting the return of questionnaires were subsequently sent to teachers. Additionally, teachers were encouraged to contact family participants in order to ensure an adequate return rate. Table 2 presents the number of questionnaires sent to teachers and families by state, and the return rate.

Insert Table 2 about here

Missing data. There were two issues with missing data that needed to be addressed. First, a parent or teacher might not have filled out all of the questions on a particular questionnaire. Second, an entire questionnaire might not have been returned for a given student. With respect to missing responses to particular questionnaire items, between 2% to 6% of the items on a given questionnaire were not completed. Because this missing data would create problems in the statistical analyses, a process was utilized to impute values for the missing data. For each item on a questionnaire, a random normal-deviate was substituted for a particular missing value based upon the mean and standard deviation of that item.

With respect to missing questionnaires, of the four questionnaires that comprised the data set for each student (i.e., the program-general questionnaire and the student-specific questionnaire which were both completed by the teacher, the questionnaire completed by the parents, and the demographic items taken from the first year survey study), it was possible that one or more were not returned. In order to be included in the final data analysis, each student had to have questionnaires from all four sources. The final database, after deleting students who did not have data from all four sources, was 312 students.

Statistical analyses. The statistical analyses performed were based upon a regression analysis of the 22 variables listed in Table 1. Some of the variables consisted of only one questionnaire item, whereas other variables consisted of multiple items. Prior to performing the regression analyses, each multiple-item variable needed to be reduced to one "score" per child. To accomplish this task, principal components analyses were performed.

Principal components analysis. For each variable that consisted of more than one item, the items for that variable were entered into a principal components analysis. The loadings from the first principal component were then used to obtain one set of "scores" for that variable. The rationale for this approach was that the first unrotated principal component would reflect a "general factor" that would best summarize a given variable. The decision to use the loadings from the first principal component was supported by a review of the principal component loadings for each variable. For the most part, the loadings for a given principal component analysis were roughly equal. This means that in general, the principal component "score" for a child on a particular variable is roughly equivalent to simply summing the z-scores for all the items of a given variable for that student. It should be noted that when a variable consisted of only two items, then the principal component score for a student on that variable was equal to the sum of that child's z-scores for the two items.

Regression analyses. The analyses of primary interest are the regression analyses. For each dependent variable, an ordinary least-squares regression analysis was performed using the full set of predictor variables. For variables that consisted of only one item, z-scores (with a mean of zero and standard deviation of unity) were used in the regression analysis. For variables that consisted of multiple items, principal components scores (which were standardized to also have a mean of zero and a standard deviation of unity) were used in the regression analysis. In total, 7 separate regression analyses were performed, namely one analysis for each dependent variable.

Because of the large sample sizes (N = 312), the regression analyses could yield many statistically significant results that were not educationally relevant. Thus, in interpreting the findings, the criterion was adopted that a standardized slope had to be statistically significant at a .05 alpha rate *and* had to be greater than .20 in absolute

value in order to be deemed meaningful. This standard was instituted in order to avoid interpreting exceptionally small, although statistically significant slopes as being important.

Results

The responses to items on the questionnaires provided by each of the teachers and families were used to estimate the strength of the association between each of the 15 educational practice and demographic variables with each of the seven student outcome variables. The results of the series of multiple regression analyses are described in Table 3. The table presents the standardized slope between each educational practice variable and student outcome variable that were determined to be .20 or better.

Insert Table 3 about here

A review of this table indicates that a single program variable, the extent to which the student was integrated into school and family activities, was significantly associated with each of the student outcome variables including social skills development [b = .39, $t(296) = 6.16$, $p < .000$), affective demeanor, [b = .24, $t(296) = 3.61$, $p < .000$], communication skills development [b = .30, $t(296) = 4.61$, $p < .000$], achievement of IEP objectives [b = .21, $t(296) = 3.29$, $p = .001$], level of independence [b = .26, $t(296) = 3.98$, $p < .000$], positive nondisabled peer attitude [b = .36, $t(296) = 5.88$, $p < .000$], and positive parent expectations for their child's future [b = .41, $t(296) = 6.68$, $p < .000$].

Other significant slopes included relationships between the age of the student and the development of communication skills [b = .36, $t(296) = 5.08$, $p < .000$], the

extent of teacher experience and the child's level of independence [b = .20, $t(296)$ = 3.40, p < .000], and finally, a negative association between the age of the student and positive nondisabled peer attitudes [b = -.23, $t(296)$ = -3.44, p < .000].

Discussion

The present investigation is the third in a series of studies that utilized survey methodology and large samples to increase our understanding of integrated educational programs: the extent to which they exist (Haring et al., 1990), student, family, and program characteristics as well as administrative and logistical issues associated with, and possibly promoting, their existence (Hunt et al., 1991), and, finally, educational practices in integrated settings associated with student achievement and positive peer attitudes and family expectations. The results of this final study suggest that out of a group of what are considered to be educational "best practices", only one, the extent to which the child participated in integrated settings and activities, was strongly linked to each one of the high priority student outcome variables.

It is a dramatic finding that only one of the twelve educational practices was found to be associated with all student outcome measures. The temptation is to impute a causal relationship between practice and student outcomes; however, it must be emphasized that the research approach utilized for this study was an associative-correlational one. Directionality of effect, if one exists, cannot be determined with this design. Additionally, the survey data gathered for this study represent, for the most part, the opinions of teachers and parents on the extent of implementation of educational practices and the level of student achievement and positive nondisabled peer attitudes. The correspondence between opinion and what might be observed in school and home settings is unknown. With these cautions in mind, the results of the study are discussed below.

Parents and teachers were asked to rate the development of communication and social skills of participating students in terms of the level of communicative functioning, from nonverbal, ineffectual means through successful verbal communication, and the appropriateness of behavior in social situations. Competency in these areas was strongly associated with the extent to which the student's program was physically integrated on the general education campus, the degree to which he or she participated in regular education classrooms and daily social, leisure, and extracurricular activities with nondisabled peers, and the amount of time spent in integrated home and community activities. These outcomes might represent an extension of the findings of Cole and Meyer (1991) that integrated educational placements predicted significantly greater gains on measures of the social and communicative competence of individuals with severe disabilities than segregated placements. Additionally, parents and teachers reported in the present study that the degree to which nondisabled children in the community reacted to the student with normalized, friendly, and approach behaviors was strongly associated with the extent of social integration. There was, however, a negative correlation between positive peer attitude and the age of the children with disabilities.

Parent's and teacher's ratings of the student's affective demeanor in terms of the pleasure, enthusiasm, comfort, and involvement they demonstrated in social situations with familiar people were also linked to the extent to which those students were included in general school activities and integrated family events. This association is supported somewhat by the findings of Park & Goetz (1985) that young adults with severe, multiple disabilities who attended a program based at a community college exhibited more happiness and enthusiasm than a matched group of adults attending a sheltered day activity center.

A relationship was found between the teacher's report of the level of achievement of Individualized Education Program (IEP) objectives and the extent to which the child was physically and socially integrated. Brinker and Thorpe (1984) also reported a significant positive relationship between the rate of social interactions with nondisabled students and the proportion of IEP objectives achieved.

Finally, the parents views on their child's ability to participate in a variety of integrated community activities, their comfort with their child's possible participation, and their expectations for their child's future in terms of level of independence, integrated living situations, and recreational opportunities with nondisabled peers were associated with the extent to which the student was currently physically and socially integrated into school and family activities. Anderson and Farron-Davis (1987) and Freagon et al. (1983) reported improved parental expectations for their child's future for those parents whose children attended integrated versus segregated educational programs, and parent reports have attributed increased health and independence of their children to integrated environments (Turnbull & Turnbull, 1985; Vesey, 1986).

A second program variable associated with the parent's perceptions of the health and independence of their child is the level of experience of the teacher; that is, the parent's perception of the child's ability to independently perform self-care activities and participate in integrated home and community events was positively correlated with the number of years that the teacher had taught students with severe disabilities. One can speculate that perhaps experienced teachers can more effectively assist parents to expand their perceptions of the potential for their child to more fully and independently participate.

Due to the associative-correlational nature of the study, the outcomes can only suggest that physical and social integration, above other educational practices,

may affect student achievement and positive parental expectations. Further research utilizing experimental research designs and observational measures is necessary to establish a causal link. What this study accomplishes is to communicate a sense of urgency in investigating the overall impact of integrated education on students with severe disabilities, their schoolmates, and their family. If social integration has the powerful effect that is suggested by the outcomes of this study, then it must be a primary consideration in the prioritization of training, technical assistance and policy (i.e., systems change) objectives.

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Table 1
Educational Program and Student Outcome Variables

VARIABLES	TYPE OF INFORMATION SAMPLED	RESPONDENT GROUPS TEACHER (T), FAMILY (F)
Educational Practices		
1. Integration: School and family activities	Ordinal scale: Level of participation in school and family activities	T, F
2. Integration: Community recreational activities	Ordinal scale: Level of participation in community recreational events and educational activities	F
3. Functional educational program	Ordinal scale: Degree to which educational activities and IEP objectives include instruction in community, domestic, vocational, leisure, and social skills domains	T
4. Data-based instructional programs	Ordinal scale: Degree to which weekly data are collected for educational programs	T
5. Community-based instruction	# of hours per week teaching in community settings	T
6. Transdisciplinary model	Ordinal scale: Degree to which ancillary services are integrated into educational activities in the school and community	T
7. Teacher integration	Ordinal scale: Degree to which the special education teacher participates in campus activities	T
8. Program reflects respect for students	Ordinal scale: Degree to which staff behavior communicates respect, and opportunities are provided for choice and risk-taking	T
9. Teacher inservice training	Ordinal scale: Level of participation in workshops and conferences	T
10. Teacher education	Highest college degree held	T
11. Teacher experience	# of years experience as a teacher	T
12. Principal involvement	Ordinal scale: Level of supervision of special education programs	T
13. Community type	Category: urban, suburban, rural	T, F
14. Family SES	Ordinal scale: Yearly income and education	F
15. Age of student	Actual chronological age	F
Student Outcomes		
1. Social skills	Ordinal scale: Level of appropriate behavior, communication, and interactive play	T, F
2. Affective demeanor	Ordinal scale: Level of pleasure and involvement in social situations with familiar people	T
3. Communication skills	Ordinal scale: Level of communication skills	F
4. Achievement of IEP objectives	Percent IEP objectives achieved	T
5. Health and independence	Ordinal scale: Level of independence and physical ability to participate	F
6. Positive nondisabled peer attitudes	Ordinal scale: Level of normalized, friendly, and approach behaviors	T
7. Positive parent expectations	Ordinal scale: Level of future independence and participation	F

Table 2

Survey Return Rate

Respondent Group	State	# Sent	# Returned	% Returned
Teachers: General	California	161	76	47
	Colorado	79	37	47
	Kentucky	37	14	38
	Utah	48	24	50
	Virginia	39	18	46
Teachers: Student Specific	California	483	231	48
	Colorado	237	114	48
	Kentucky	111	40	36
	Utah	144	73	51
	Virginia	117	52	44
Family	California	483	231	48
	Colorado	237	105	44
	Kentucky	111	34	31
	Utah	144	69	48
	Virginia	117	52	44

Table 3
Regression Analyses

STUDENT OUTCOME VARIABLES	PROGRAM VARIABLES	Standardized Slope	t	p value
Social skills	Extent of integration: School & family activities	.39	6.16	.000
Affective demeanor	Extent of integration: School & family activities	.24	3.61	.000
Communication skills	Age	.36	5.08	.000
	Extent of integration: School & family activities	.30	4.61	.000
Achievement of IEP objectives	Extent of integration: School & family activities	.21	3.29	.001
Health and independence	Extent of integration: School & family activities	.26	3.98	.000
	Teacher experience	.20	3.40	.000
Positive nondisabled peer attitude	Extent of integration: School & family activities	.36	5.88	.000
	Age	-.23	-3.44	.000
Positive parental expectations	Extent of integration: School & family activities	.41	6.68	.000