◊ CHAPTER 15 ◊

Supporting the Education of Students with Severe Disabilities in Regular Education Environments

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Over the past decade and a half, when the term "integration" has been applied to the education of students with severe disabilities, often it has meant placement in self-contained classes in general attendance elementary and secondary schools. Such placement may have included minimal interactions with nondisabled peers that typically took place in nonacademic settings and activities, such as the lunchroom, bus, playground, assemblies, and homeroom. Any participation in regular classes was generally restricted to the "specials" such as physical education, art, music, or the technical arts (e.g., shop). While the movement toward at least this level of integration signaled a vast improvement over placement in separate schools attended only by children with disabilities, the observed limitations and inequities of self-contained special classes have resulted in the challenge to develop a more inclusive model of school integration (McDonnell & Hardman, 1989; Taylor, 1988).

Beginning in the late 1980s and now into the 1990s, the term "integration" is increasingly being replaced by the phrase "full inclusion." Full inclusion refers to the provision of appropriate educational services to all students in regular classes attended by nondisabled students of the same chronological age in their neighborhood school, including students with severe disabilities. Like many other promising practices, the placement of students with severe disabilities in regular classes has been evolving. To date, congruence of regular class placement with the values inherent in PL 94-142 (Lipsky & Gartner, 1989, p. 4) and the logic embedded in the various curricular and programmatic components of a quality educational program (Fox et al., 1987; Meyer, Eichinger, & Park-Lee, 1987) have resulted in successful demonstrations of regular class integration (Ayres, 1988; Berres & Knoblock, 1987; Biklen, 1985, 1988; Brost & Johnson, 1986; Flynn & Kowalczck-McPhee, 1988; Ford & Davern, 1989; Ford, Foster, Searl, & Taylor. 1984; Forest, 1984, 1987; Giangreco & Meyer, 1988; G. Porter, 1988; Schatunan, 1989; Thousand & Villa, 1989; Villa & Thousand, 1990; Williams et al., 1986). This evolution has reached the point where program descriptions are more widely available and empirical support has begun to emerge.

The main purpose of this chapter is to review existing literature on students with severe disabilities regarding the provision of

Partial support for preparation of this chapter was provided through the U. S. Department of Education, Office of Special Education and Rehabilitative Services, Demonstration Projects for Deaf-Blind Children and Youth (H086H80017) awarded to the Center for Developmental Disabilities at the University of Vermont. The opinions expressed herein do nor necessarily reflect the position or policy of the U.S. Department of Education, and no official endorsement should be inferred.
The authors wish to acknowledge Wes Williams. Lu Christie, Rich Villa, Jacque Thousand, and Gloria Kishi for their helpful feedback and suggestions during the preparation of this chapter.

appropriate special education services in regular education environments. Both the TASH Resolution on the Redefinition of the Continuum of Services (Document III. 1, this volume) and the Supported Education Resolution (Document III.3, this volume) challenged the field to move beyond the earlier concept of separate classes in regular schools to the design, implementation, and validation of effective models of full inclusion into regular classrooms and the life of the school. Readers wishing a more detailed history and rationale for this shift in emphasis or a summary of the substantial data base documenting the benefits of integration for students with and without severe disabilities are referred to Bogdan (1983); Forest (1987, 1989); Gartner and Lipsky (1987); Lipsky and Gartner (1989); Meyer and Putnam (1988); Reid (1987); Snell (1988); Snell and Eichner (1989); W. Stainback, Stainback, and Forest (1989); and Thousand et al. (1986).

PARAMETERS OF INCLUSIVE EDUCATION

Peck and Semmel (1982) noted that "the LRE concept defines optimal placement for children with special educational needs as that in which an appropriate instructional program can be delivered with the least abrogation of the child's right to be educated with nonhandicapped peers" (p. 56). Thus, the essence of regular class integration for students with severe disabilities is *providing specially designed instruction in regular education environments*. This interpretation of the law was upheld by the Sixth Circuit Court of Appeals in the case of *Roncker v. Walter* (1983). The court ruled that if a desirable service currently provided in a segregated setting can feasibly be delivered in an integrated setting, it would be inappropriate under PL 94-142 to provide the service in a segregated environment. This was referred to as the "principle of portability" and advanced the legal and logical grounds for providing specially designed instruction in regular education environments.

Within regular classes, the education of students can be broadly characterized along two dimensions: 1) the student's educational and curricular needs, and 2) the supports provided to the student in order to meet those needs successfully (Giangreco & Meyer, 1988). The student's educational needs would be addressed by particular goals and objectives reflecting prioritized curricular content, delivered to the student in both school and nonschool (community-based) instructional contexts. Any given individual student might be pursuing curricular content that is substantively the same as that for nondisabled age-peers, or he or she might be pursuing a course of study that is extended, modified, or otherwise individualized and might vary greatly from that designed to accommodate the majority of typical students. Supports refer to resources such as school personnel, peer groupings, equipment and prosthetic devices, materials, and various instructional adaptations designed to facilitate inclusion and learning for the student. And, finally, a student might week toward attaining his or her educational goals given the same supports typically available in regular education, or might require extended, modified, or otherwise individualized supports.

Figure 15.1 illustrates four basic options for education within regular education classrooms that reflect these basic parameters of program and support. These options may occur in combinations throughout the course of a week, a day, or even within an individual lesson. In the first option (A), a student's program would be similar to the typical curricular content for a particular grade, and the supports provided would be those generally available in regular education environments: A student eligible for special education services would obviously have needs and require supports beyond this level. Option B might represent a program for a student with a sensory or motor impairment only, but whose curricular goals are virtually identical to those established for age-peers; this student would require certain specialized supports such as the services of an orientation and mobility specialist and/or adaptations such as translation of material into sign language or Braille. Students with severe disabilities are most likely to require the kinds of accommodations represented by the two remaining options (C and D). In some instances (perhaps for a portion of the school day), the student's highly individualized goals might be achievable within the regular classroom with the

PROGRAMS	SUPPORTS: Supports similar to those typically available in regular education	SUPPORTS: Supports that are extended, modified, or individualized
Educational program similar to regular education	A No accommodations required	B Support accommodations required
Educational program that is extended, modified, or individualized	C Program accommodations required	D Program and support accommodations required

Figure 15.1. Integration options within regular education classroom environments across the dimensions of support and program. (Adapted from Giangreco & Meyer 1988, p. 256.)

kinds of supports typically available in that setting (option C). In most instances, however, students with severe disabilities will have educational program and support needs that are more extensive and require formal accommodations within the regular classroom (option D). Later in this chapter, we describe both the supports and curricular adaptations that have been proposed to accomplish this.

Local Schooling

Educating students with disabilities in the same schools they would attend if not handicapped is supported by law (Code of Federal Regulations, 1987, §300.552 a, c) and logic (L. Brown, Long, Udvari-Solner, Davis, et al., 1989; Hardman, McDonnell, & McDonnell, 1989; Sailor, 1989).

Access and opportunities to participate in the variety of activities valued by a community occurs in the local school, so that social networks can be established and maintained (Froland, Pancost, Chapman, & Kimboko, 1981). Interdependent relationships among people established through these networks have both direct and indirect implications for the quality of a person's life (Meyer & Eichinger, 1987). The kinds of supports offered by such relationships across the life span are personally beneficial by assisting persons to cope with stress; achieve a positive psychosocial adjustment; and establish close, meaningful relationships such as friendships, partnerships, and an adult family unit (Hardman et al. 1989; Snow & Forest, 1987; Strully & Strully, 1985).

Being a member of one's community also creates opportunities for personal growth and achievement that might otherwise be unavailable. For example. Hasazi, Gordon, and Roe (1985) found that a significant percentage of people with disabilities obtained their jobs through social networks of family and friends. Conversely, when the network of family and friends either is not established or is disrupted by placement beyond the boundaries of the neighborhood community: 1) family involvement is compromised, 2) school programs are less likely to reflect curricular content relevant to the community where the student lives and spends his or her nonschool time, 3) access to extracurricular activities may be limited, and 4) other members of the community do not experience the necessary opportunities to develop both the social commitment and skills needed to include individuals who require varying levels of support (Hardman et al., 1989).

Regular education service delivery patterns vary widely depending upon factors such as population density, geography, tradition, and resources (Thousand et al., 1986). Therefore, the ways students move through the schools in different communities will vary accordingly.

While the patterns for school-age students may already be established, integrated patterns of service delivery for preschoolers and older students (18-21 years old) require creative and individualized planning. For example, postsecondary-age students might attend programs on college campuses (Frank & Uditsky, 1988; Giangreco & Meyer, 1988; Panitch, 1988; Uditsky & Kappel, 1988). Given the age of the students, this regionalization would be normalized since most 18-21-year-olds who are continuing their education typically attend colleges or technical schools rather than high schools. Further, in rural areas, colleges often are located in regional centers for recreation, social gathering, purchasing, cultural events, and employment. Thus, the regionalization matches students' needs for access to meaningful instructional environments (L Brown, Long, Udvari-Solner, Davis, et al., 1989).

If students with severe disabilities we to be included in their local schools and follow the patterns of service delivery offered to their nondisabled siblings and neighbors, school personnel must cease confusing intensity of services with location of service delivery (Taylor, 1988). Further, schools must be restructured, both physically and programmatically, to provide better access to all students and to provide educational experiences that reflect the demands of an inclusive life in the community.

Individualized Educational Goals

In recent years, major curricular reform has occurred in educational programs for students with severe disabilities. Past practices of organizing a sequence of educational goals for individual students based upon normative developmental continua in traditional domains such as motor, language, cognitive, socioemotional, and so on were soundly criticized by L. Brown, Nietupski, and Hamre-Nietupski (1976). L. Brown and his colleagues argued that such curricula were fundamentally inappropriate for students with severe handicaps, and by definition, could only result in the acquisition of relatively meaningless, nonfunctional splinter skills across the school career. Alternatively, curricula that were referenced to the demands of current and future domestic, vocational, leisure, and community environments – such that each goal selected for instruction represented a functional skill that would be of use to students now and as adults were both feasible and more likely to result in meaningful outcomes for students with severe intellectual handicaps (L. Brown et al., 1976; L. Brown et al., 1979).

These claims were supported in a longitudinal follow-up of the ultimate achievements of two groups of graduates from the Madison, Wisconsin, public schools, one of which had experienced a predominantly developmentally based curriculum and the other a community-referenced, functional curriculum (L. Brown et al., 1987). Further empirical evidence for the effectiveness of an environmentally referenced approach to the education of students with severe disabilities was summarized in Homer, Meyer, and Fredericks (1986) and in Goetz, Guess, and Stremel-Campbell (1987). Finally, widespread consensus regarding the components of functional curricula was documented in a large-scale, national survey conducted by Meyer et al. (1987). Their social validation of "most promising practices" for students with severe disabilities involved a comprehensive survey of the professional literature to identify such practices (including those supported by empirical data) and formal ratings by relevant respondent groups – state directors of special education; prominent parent advocates; and national experts in mental retardation, severe disabilities, behavioral research, and deaf-blindness.

Integration into the community was a prominant feature of the L. Brown et al. (1976) call for action, and this concern led directly to the recommendation that curricula must be referenced to the demands of actual environments. In addition to the L. Brown et al. (1987) follow-up report on the outcomes of graduates, there is preliminary evidence that instruction in an age-appropriate functional activity will be associated with increased skill in social interactions with peers (Vandercook, 1989). Various other reports have documented the successful acquisition and generalization of functional skills that relate to increased social competence and community adjustment (e.g., Snell & Browder, 1986). Clearly, developmentally sequenced curricula for students with severe intellectual handicaps entailed increasingly greater discrepancies between their

educational activities and those of same-age, nondisabled peers. Furthermore, such curricula were even associated with practices such as placement of secondary-age students with severe disabilities on elementary school campuses in the early days of integration. Now, however, as the context of educational services has shifted from self-contained classes to regular classes, there is a need to expand existing environmentally referenced curricular approaches to address the demands and opportunities available in those environments (York & Vandercook, in press).

For each student, the individualized education program (IEP) is intended to reflect his or her educational priorities. As regular class placements have increased and received professional support, so have resources for assisting in IEP development, which are based upon the premise of regular class integration. Recent examples include the *Syracuse Community-Referenced Curriculum Guide* (Ford et al., 1989), *The McGill Action Planning System-MAPS* (Vandercook, York, & Forest, 1989), the *Cayuga-Onondaga Assessment for Children with Handicaps. Version 6.0 (Giangreco, Cloninger, & Iverson,* 1990), and the *Individual Program Design Procedures Manual* (William, Fox, & Fox, 1988). Each of these shares certain features, including: 1) an emphasis upon team decision making, 2) a home-school collaboration component, 3) planning based upon a process that incorporates both ecological analysis and problem-solving techniques, 4) strategies for the selection of prioritized goals for individual students, and 5) an approach for matching individual student goals with regular class schedules and activities. While each of these guides describes program components that have been in use for a period of at least several years in various public school programs (and thus have been "field tested" to some extent), none is accompanied by formal data regarding student outcomes.

Longitudinal Planning and Meaningful Outcomes

Annual goals that signify educational priorities for an individual student have been the hallmark of the IEP yet exclusive emphasis upon yearly goals could result in an education that is too narrowly focused. The same generic outcomes of schooling that are relevant for nondisabled students may be appropriate for students with disabilities. These include such factors as citizenship, community membership, development of a positive self-image, expansion of meaningful personal relationships, productive use of leisure time, vocational productivity, self-control and competence in personal management, and developing a personal style for ongoing learning (i.e., "learning how to learn"). Thus, just as an exclusive emphasis upon acquiring basic academic skills might be regarded as far too restrictive for nondisabled students, an emphasis upon the mastery of a set of functional skills for students with severe disabilities could unnecessarily limit individuals' abilities to achieve social competence and full citizenship as adults.

Williams et al. (1988) noted that IEP goals have typically not addressed these broader outcomes of schooling that might bell require more than a single year to achieve. Earlier, Voeltz and Evans (1983) and Evans and Meyer (1987) expressed a similar concern that expectations and, eventually, evidence regarding meaningful student outcomes should serve as the basis for the selection of prioritized annual goals on the JEP Similar concerns regarding the value of more generic skills such as decision making as a supplement to more typical functional skills have also appeared (e.g., Guess, Benson, & Siegel-Causey, 1985; Shevin & Klein, 1984). Logically, students in self-contained environments would be most vulnerable to narrow educational experiences, while those who are mainstreamed would be exposed to a wider breadth of opportunity and daily validation of the extent to which prioritized educational goals actually relate to increased social competence.

The regular education curriculum could prove to be a starting point for the identification of the needed breadth of curricular experiences (Giangreco et al., 1990). It may be appropriate to require substantive justification for any significant deviations from the curriculum content and typical educational activities experienced by typical age-peers (Giangreco et al., 1990). While educational models that seek to place individualized student priorities within a more expansive educational context are not new, their availability and reports of their efficacy with students who

have severe disabilities have yet to appear in the professional literature.

Instruction in Nonschool Environments

Community-based instruction has become widely accepted as an essential component of educational programming for students with severe disabilities (L. Brown et al., 1976; L. Brown et al., 1983; Falvey, 1989; Sailor et al., 1986; Sailor et al., 1989; Snell & Browder, 1986). The need for direct instruction in the community has been based upon certain assumptions:

1. Students need to learn skills in the environments in which they will ultimately be used.
2. Because students with severe handicaps have difficulty generalizing what they learn across settings, learning those skills directly in the community becomes critical.
3. Because students with severe disabilities require more time to master skills, instruction in the community must also commence at an earlier age than might otherwise be necessary to ensure sufficient learning time.
4. Community-based instruction would also ensure that the essential interaction skills needed for use of skills in the presence of relevant nondisabled persons in the community would be evident.
5. Community-based instruction would by definition entail the simultaneous preparation of the nondisabled population for interactions with those with severe handicaps.

Various recommendations have appeared in the literature regarding the relative proportion of time students should spend in nonschool, community-based instruction versus school-based activities. At one end of the spectrum, the Community Intensive Instructional Model recommends explicit guidelines for increasing amounts of time beginning with once a week for 3-8-year-olds, twice a week for 9-11-year-olds, four times weekly for 12-18-year olds, and 80%-100% of the day off campus by age 19-22 (Sailor et al., 1989). Interestingly, earlier descriptions of this model emphasized fairly high percentages of time off campus for even younger children (e.g., 75% of available instructional time by ages 12 to 16; see Sailor & Guess, 1983, and Sailor et al., 1986). *The Sailor* et al. (1989) and other recent works have emphasized the importance of the regular education classroom and school setting as the context for essential learning experiences (e.g., Ford et al., 1989). Yet, there continues to be considerable emphasis upon the importance of leaving the regular education setting for community-based instruction, particularly as the student becomes older.

Suggested percentages of time to be spent in various settings may be useful as a rule of thumb to secure currently unavailable learning experiences, but these guidelines can also become problematic if they overshadow individualization based upon unique student needs. Futhermore, there are virtually no empirical data to support such percentages. In fact, there currently exists no research evidence to evaluate the relative importance of school versus nonschool learning environments and experiences in general. (The literature on general case instruction does investigate one aspect of this issue – the extent to which criterion skills can be mastered in various learning situations as a function of the extent to which critical components are replicated. See Homer, McDonnell, & Bellamy, 1986, for a review of this literature). Logically, it is reasonable to propose that because of various learner characteristics, students with severe disabilities may require direct instruction in criterion environments. But it is an empirical question whether the regular classroom environment is or is not the criterion environment for various critical life skills. For example, if one justification for nonschool instruction is that it prepares persons with and those without disabilities for task-related interactions with one another, shared school environments could be similarly justified as the essential context for children to experience those and other more informal social interactions across the life span. How much community-based instruction is essential for the acquisition of critical criterion skills, and how much nonschool instruction can students experience without cost to the potential benefits of learning and social experiences in the mainstream school setting? These are important questions that must be addressed in future work.

MANAGEMENT NEEDS RELATED TO INSTRUCTION

One of the most important areas of support, and often the simplest to accommodate, are management needs related to instruction. Management needs refer to *aspects of the educational program that are done to or for the student* that must be attended to if the student is to have adequate access to educational opportunities. Unlike student participation in instruction required by IEP goals or general curricula, management needs do not necessarily require any active student response. For example, the courts have established that many health-related procedures such as management of tracheostomy *(Hymes v. Harnett County Board of Education, 1981),* intermittent catheterization *(Irving Independent School District v. Tatro, 1984; Tokarcik v. Forest Hill School District, 1981),* and dispensing medication *(Department of Education, State of Hawaii v. Katherine D., 1983)* are school responsibilities.

In the *Irving (1984)* case, the Supreme Court stated:

> A service that enables a handicapped child to remain at school during the day is an important means of providing the child with meaningful access to education that Congress envisioned. The Act (P L. 94-142) makes specific provision for services, like transportation, for example, that do no more than enable a child to be physically present in class.

Therefore, services such as tube feeding to provide nutrition and hydration, repositioning to allow for physical comfort and avoid debilitating conditions (e.g., joint contractures, decubitis ulcers), or providing adaptive devices/materials (Bigge, 1988, p. 64; York & Rainforth, 1987) are appropriate management needs, since they are needed by some students merely in order to be in school for a full day. The Supreme Court qualified its support for management services by indicating that, ". . . if a particular medication or treatment may appropriately be administered to a handicapped child other than during the school day, a school is not required to provide nursing services to administer it" *(Irving Independent School District v. Tatro, 1984).*

Three major issues present themselves when management needs are delivered to students who are placed in regular education classes: 1) the relationship between management needs and educational inclusion, 2) the relationship between management needs and student dignity, and *3)* the extension of management needs to encompass services that will be increasingly prominent in integrated settings.

The courts have held that students with intensive management needs do not relinquish their right to be educated in the least restrictive environment. The case of *Espino v. Besteiro* (1981) involved the need for an air-conditioned environment for a 7-year-old child who was unable to regulate his own body temperature. The school originally agreed to provide an air-conditioned cubicle to be placed in the classroom. The court interceded and required the school to air condition the entire classroom because the cubicle restricted the student's interactions with peers. Various advances in medical and engineering technology imply that students with increasingly complex management needs will be able to gain access to regular schools and classrooms. Precautions will be required to ensure that attention to management needs does not restrict regular class placement opportunities.

As management needs are attended to, student dignity and privacy must not be violated. Practices that have been associated with self-contained special classes or special schools, such as changing a student's soiled diaper behind a screen in the corner of the classroom or administering postural drainage and suctioning in the presence of other students, are inappropriate in separate classes and become even more aberrant and stigmatizing in regular classes. Such practices may interfere with a learner's self-concept, perpetuate double standards, and do nothing to enhance the perceptions of classmates toward the learner. Regular class placement does not necessarily mean that every service provided to the student occurs in the regular class. Students placed in regular classes could have access in the same school subenvironments used by nonhandicapped students for procedures requiring privacy, for example. Thus, students should change clothes for physical education class in the locker room, have their bowel and bladder needs attended to in a bathroom, and

receive medication in the health office. Since adapted materials and devices range from simple and unobtrusive to complex and very obtrusive, care must also be taken to ensure that any potential benefits of using an adaptation are not overshadowed by stigmatizing effects that may draw undue negative attention toward a person with disabilities (Stieler et al., 1977). If students with severe disabilities use the same facilities as their nondisabled counterparts and use the most normalized adaptations available, the likelihood of compromising student dignity can be greatly reduced.

Finally, management can be extended beyond passive therapeutic techniques, adaptations, specialized health procedures, and transportation to include removal of bathers to participation and supports to professionals and families *(Code of Federal Regulations,* 1987, §300.13). For example, regular education students might be taught the augmentative communication system used by a student who is nonverbal. This would be considered a management need because it is done for the student (not necessarily requiring his or her participation) and would be necessary for access to the educational program. Another management need might be consulting with school staff who operate after-school programs. In the case of *Rettig v. Kent City* (1983), the court required the school to provide at least 1 hour per week of extra-curricular activities as a related service for a 10-year-old student with severe disabilities. The court's decision was based, in part, on the *Code of Federal Regulations* (1987, §300.16, Nonacademic Services) which stated, "Each public agency shall take steps to provide nonacademic and extracurricular activities in such a manner as is necessary to afford handicapped children an equal opportunity for participation in those services and activities... [and that] they be exposed on an equal basis as nonhandicapped children." Further, in *Stacy G. v. Pasadena Independent School District* (1982), the court directed the school to offer training in behavioral techniques and counseling to the parents of a child with severe retardation and challenging behaviors to help relieve emotional stress, and therefore have an indirect benefit for the child.

Management needs typically are a small but important aspect of the educational program. Strategies to address management needs that support mainstreaming, preserve student dignity, and are expansive in their vision of what is necessary to do for a student can provide clear paths to inclusive opportunities.

CURRICULAR AND INSTRUCTIONAL PRACTICES

As regular and special education professionals work together to deliver appropriate educational programs to students with severe disabilities in the regular classroom, curricular and instructional practices must be identified to facilitate this process. Furthermore, these efforts should be coordinated with parallel reform movements to restructure America's schools and classrooms to better meet the needs of today's diverse student population. For example, educators concerned about the large percentage of students at risk for dropping out of school acknowledge that these statistics may indeed reflect failures to learn, but may also be evidence of schools that fail to teach (Natriello, 1987; Wehlage & Rutter, 1987). In fact, the variety of pressures for reform upon our educational system creates a window of opportunity for collaborative research efforts to validate classroom and instructional organization patterns that promote both achievement and social adjustment for all students in the regular classroom. Various authors concerned about the absence of appropriate mainstream educational opportunities for students with disabilities have advocated for fundamental change in the traditional means of delivering instruction in regular education to solve this dilemma (D. W. Johnson, Johnson, & Maruyama, 1983; Madden & Slavin, 1983; Nevin & Thousand, 1987; Wing & Birch, 1984).

In this section, existing evidence is reviewed regarding those curricular and instructional practices that have been related to: 1) the successful mastery of relevant skills, including evidence on acquisition, generalization, and maintenance of those skills; 2) progress in attainment of meaningful outcomes, such as evidence of social competence in school and nonschool environments; 3) efficient delivery of services to students with severe disabilities within

the regular classroom at various age levels; and 4) coordination of services between regular and special education professional staff and resources. As noted earlier in this chapter, the majority of this research has been carried out for two scenarios: 1) effects of relatively limited integration experiences for students with severe disabilities have occurred in situations where these students attend self-contained classes for the majority of the school day, but are exposed to time-limited mainstreaming and/or peer interaction experiences; and 2) the effects of more fundamental alterations to instructional and curricular practices upon students has occurred in mainstream educational arrangements for students with mild to severe disabilities. Thus, the data base is disappointingly limited for evidence regarding full inclusion in mainstream classes for students with severe disabilities. Nevertheless, this section reviews the subset of promising instructional support approaches for which data exist that might be applicable for students with severe learning needs.

Structured Social Contact

Research carried out over a period of many years regarding the social integration of students with mild to moderate disabilities has long documented that mere physical proximity will not result in positive outcomes (Gresham, 1982; Semmel, Gottlieb, & Robinson, 1979). According to some researchers, when students with disabilities are subjected to unstructured integration experiences, they may: 1) be more socially isolated from their peers than are nondisabled students, 2) be less socially accepted than their nondisabled peers (Miter & Taylor, 1981; Bryan, 1974; Gresham, 1982; MacMillan, Jones, & Aloia, 1974), and/or 3) interact more frequently among themselves than with nondisabled students in integrated schools (Peterson & Haralick, 1977; Porter, Ramsey, Tremblay, Iaccobo, & Crawley, 1978). Alternatively, almost any structured effort to have an impact upon the academic and social integration of students with mild to moderate disabilities has had a positive outcome. Programs ranging from teaching social skills to students with disabilities to structuring teacher behavior to model positive interactions with those students in in the regular classroom have been associated with increases in peer acceptance and academic performance (for a comprehensive review of this research, see Meyer & Putnam, 1988). (The evidence of the effects of instructional modifications has been even more dramatic, but these data are discussed in the next section.)

On the one hand, research carried out in integrated schools has also documented the positive effects of structured contact upon students over and above the effects of physical proximity alone. On the other hand, Voeltz (1980) found that even without a structured interaction program, the mere presence of students with severe disabilities on campus – even though they attended completely separate self-contained classes – was associated with significantly more positive student attitudes toward persons with disabilities in comparison to the attitudes held by students in schools that were not integrated. But in both her 1980 report and her 1982 follow-up, the most positive acceptance scores occurred in those schools where students with severe disabilities were enrolled in self-contained classes but also participated in a structured recess "special friends" peer interaction program: these results were highly significant in this large-scale investigation involving several schools and a large sample of children (Voeltz, 1980, 1982). In her follow-up study in which nondisabled peers (interviewed several years later as older teenagers) who had or had not participated in the earlier peer interaction program in elementary school, Kishi (1988) found that those students who had experienced either contact or interactions with peers with severe disabilities retained more positive attitudes than those who had had no contact. This follow-up study further suggested that students' positive attitudes increased with age (Kishi, 1988).

Kishi (1988) also reported that several students described negative feelings about situations during the earlier elementary school interaction program when they were asked to "help" or supervise a student with severe disabilities. Apparently, at least some staff members had involved nondisabled students in activities such as feeding despite explicit guidelines for the program prohibiting such interaction experiences

(Voeltz, 1984). Reports of such negative memories years later by nondisabled peers are consistent with various caveats offered by D.W. Johnson and Johnson (1989) in their review. These authors maintained that some of the reasons why physical proximity alone is not sufficient to produce positive relationships include: 1) both peers with and without disabilities will experience an "interaction strain" in initial encounters, 2) normative cultural admonitions to "be kind to someone" with a disability may result in overfriendliness or paternalism in initial encounters that may be likely to decrease over time; and 3) the presence of ambivalent feelings that involve more favorable overt or public attitudes may be experienced along with less favorable nonverbalized feelings toward persons with disabilities. If such issues are valid, it would be particularly important that the interactions between individuals with severe disabilities and their nondisabled peers be carefully structured to offset these phenomena of interaction strain, paternalism, and ambivalent feelings that could become increasingly and openly negative over time. Either physical proximity alone or demanding interactions that place unreasonable responsibilities upon the child without disabilities could ultimately result in decreased social acceptance of persons with disabilities.

Instructional Modifications

It is not surprising that planned integration efforts have posed challenges to schools, given the strong tradition of teacher-directed, whole-class, age-graded instruction with little instructional variability across relatively homogeneous groups of children (Goodlad, 1983). Elementary and secondary teachers typically are unaccustomed to teaching groups of students that would be as diverse as those suggested by full inclusion of students with severe disabilities. Students may also be unaccustomed to learning and working with peers with disabilities; they too may lack the breadth of interpersonal skills needed for meaningful and positive cooperation with peers who seem quite different from other classmates. D. W. Johnson, Johnson, and Holubec (1986) stressed that students are not born collaborators, but must learn the skills required to work effectively with one another. Strain and Shores (1983) also noted that the absence of interpersonal skills needed by students of varying ability levels to learn together would continue to be a critical barrier to effective integration unless instruction in those skills was provided. Various other educators have also maintained that successful integration will be dependent upon appropriately structured classroom activities and accompanied by teacher guidance and encouragement to maximize learning and interpersonal outcomes (Ballard, Corman, Gottlieb, & Kaufman, 1977; Bricker, 1978; Stainback & Stainback, 1985).

Thus, a major challenge for those involved in integrating students with severe disabilities is to provide specialized instruction to meet individual student needs while also providing opportunities for meaningful peer relationships and participation in classroom activities. Students receiving special services may not always work at the same pace or be guided by the same educational objectives and curricula as their age-peers in the regular classroom. Past practices that involve structuring individualistic learning activities-tutorials-within the regular class have been referred to as "islands in the main-stream" and associated with continuing isolation of those students from their peers and the life of the classroom (Biklen, 1985, p. 18). As Madden and Slavin (1983) noted, "All too often mainstreaming involves putting academically handicapped students in regular classrooms where their learning problems cause them to be resegregated" (p. 552).

One promising approach that involves students of varying ability levels in shared instructional and learning experiences is *cooperative learning* (D.W. Johnson et al., 1986). In cooperative groups, individuals work together to reach common goals (Deutsch, 1949). Cooperative learning situations can be contrasted with learning situations in which an individual's goal attainment is not correlated with group goal attainment (individualistic) or is negatively correlated with others' goal attainments (competitive).

As conceptualized by D.W. Johnson and Johnson (1989), cooperative learning is a teaching strategy that consists of five basic elements. "Positive interdependence" is the first requirement. This means that accomplishment of a group goal is dependent

upon members working together – otherwise the goal cannot be achieved. Methods for promoting positive interdependence are: 1) having mutual goals (goal interdependence); 2) utilizing divisions of labor (task interdependence); 3) dividing and/or sharing materials, resources, or information among group members (resource interdependence); 4) assigning students differing roles (role interdependence); and 5) giving joint rewards (reward interdependence). Second, face-to-face verbal (or other communication forms) interactions must occur. Third, students are held individually accountable for mastering the assigned material and contributing to the group's efforts. Insisting upon individual accountability averts the "hitchhiking" phenomenon, where one student does most of the work and the others are viewed as getting a "free ride." Fourth, students are expected to utilize positive interpersonal and small-group skills. Teachers provide specific instructions on how to collaborate in groups (e.g., by providing instruction in social skills such as encouraging others to participate or taking turns). Teachers also spend time monitoring student behaviors, discussing group functioning, and providing students with feedback on their performance. The final essential component of good cooperative learning is group processing, which involves self-evaluation within the group regarding how well the group is functioning and whether group goals are being achieved.

Extensive research on cooperative learning (approximately 600 studies to date) has indicated that in addition to contributing significantly to student achievement, cooperative learning activities result in students who tend to be friendlier, have more of a group orientation, and learn more from one another (D.W. Johnson et al., 1983; D.W. Johnson, Maruyama, Johnson, Nelson, & Skon, 1981). In cooperative learning situations, more helping, encouraging, tutoring, and assisting among students occurs than in competitive or individualistic situations (D.W. Johnson & Johnson, 1986). Cooperative learning experiences also have been found to "promote more differentiated, dynamic, and realistic views (and therefore less stereotypes and static views) of other students (including handi-capped peers and students from different ethnic groups) than do competitive and individualistic learning experiences" (D.W. Johnson & Johnson, 1984, p. 115).

Over 50 studies have been conducted on main-streaming and cooperative learning. D.W. Johnson et al. (1981) and D.W. Johnson and Johnson (1989) reviewed 41 studies comparing the relative effects of two or more goal structures on interpersonal attraction between students with and without disabilities. Cooperative learning experiences produced greater interpersonal attraction between the two groups of students than did competitive (effect size = 0.70) and individualistic (effect size = 0.16) experiences.

Although most studies on the use of cooperative learning have involved students with mild disabilities, the application of such procedures to students with moderate and severe handicaps is increasing. Studies have been conducted in elementary and secondary school and recreation settings, involving activities as varied as science projects, art, cooking, music, academic and preacademic tasks, and group recreation activities (Eichinger, 1990; Jellison, Brooks, & Huck, 1984; R. Johnson, Johnson, DeWeerdt, Lyons, & Zaidman, 1983; R. Johnson, Rynders, Johnson, Schmidt, & Haiden, 1979; Putnam & Rynders, 1985; Rynders, Johnson, Johnson. & Schmidt, 1980; Wilcox, Sbardellati, & Nevin, 1987). The general findings from this research are that cooperative learning situations are associated with significantly higher levels of certain positive social and verbal interaction behaviors, greater interpersonal attraction on sociometric outcome measures, and academic gains comparable to those in competitive and individualistic situations.

A study by Putnam, Rynders, Johnson, and Johnson (1989) involved students with moderate and severe disabilities in fifth-grade science classes. Social interaction behaviors of students in cooperative groups either receiving or not receiving instruction in cooperative skills were compared. The students receiving cooperative skills instruction interacted more positively with one another than did those who did not receive this instruction. Although the students with disabilities in this study were not expected to attain the same achievements in science as the other students, there was anecdotal evidence that

students contributed to their groups' goal attainments in various ways while also writing on their own individual instructional objectives. Individual objectives focused on the development of skills such as following instructions, identifying objects, measuring liquids, taking turns, obtaining materials at the back of the room, and communicating effectively.

The Putnam et al. (1989) cooperative learning investigation combined aspects of curriculum overlapping (described later in more detail) as well as partial and extended participation in science activities. These included: 1) having a student with moderate disabilities print the answers to the questions as the other group members spelled the words, and 2) having a student with severe disabilities obtain the equipment from a table and pour water into a container during an experiment on displacement. These examples and others described in Ford and Davern (1989) demonstrate creative teacher planning to include students with severe disabilities in regular class activities. Further research is needed to determine which educational situations are most suited for cooperative learning activities involving heterogeneous groups that include students with severe disabilities.

Curricular Adaptations

A key strategy for incorporating students with severe disabilities into regular classes is through curricular adaptations, or modifying curriculum assignments to meet the needs of individual learners. Typically, students with severe disabilities learn at a significantly slower rate than do nondisabled classmates. Therefore, the lesson content expectations placed upon these students must be adjusted to: 1) prevent mismatch between each student's skill level and the lesson content, and 2) promote student success in learning relevant skills. There is evidence to suggest that appropriate curricular choices for students result in success on daily tasks, which are the antecedents to long-term achievement (Gickling & Armstrong, 1978). While curricular adaptations for a student might involve a combination of learning alone and learning in small and large groups, this section focuses on curricular adaptations that provide for learning within heterogeneous groups. This is not meant to imply that there is never a need to deliver intensive individualized instruction outside of group contexts an issue not unlike that of deciding how much community-based instruction is needed and justified outside the regular school for each student. However, only the Meyer et at., (1987) social validity study of general guidelines for relative proportions of such learning opportunities provided "empirical" support for promising practices in this area. Clearly, future research is needed to address this issue.

Adapting curricula to meet individual student needs is a task that is familiar to many regular education teachers. Individualization involves establishing personalized goals and objectives for a student and determining effective ways to accomplish them. Two broad options exist for individualized curricular adaptations: 1) multi-level curriculum selection, and 2) curriculum overlapping.

Multilevel Curriculum Selection

Multilevel curriculum selection refers to identifying different goals and objectives for individual students within the same curricular domain and teaching them within the same lesson or activity (C. Campbell, Campbell, Collicott, Perner, & Stone, 1988). For example, a student with severe disabilities integrated into a reading group with his or her second-grade classmates who are learning to read words and simple sentences may be learning to read two to three functional vocabulary items and to match those words to sample objects. Multilevel curriculum selection has occurred in regular education as an adaptation of *Bloom's Taxonomy of Educational Objectives* (1956), including knowledge, comprehension, application, analysis, synthesis, and evaluation goals for different students. For example, in a lesson on money, one student might be learning at knowledge level (e.g., identifying money), another at comprehension level (e.g., understanding the uses of money), and others might be applying their knowledge and comprehension by making purchases and budgeting.

Multilevel curricular selection can involve "partial participation," a concept whereby persons with severe disabilities "can acquire many skills that will allow them to function, at least in part, in a wide variety of least restrictive school

and nonschool environments" (Baumgart et al., 1982, p. 19). The assumptions underlying partial participation are that: 1) it is educationally more advantageous than exclusion from age-appropriate environments and activities, 2) it is applicable regardless of the student's degree of dependence or level of functioning, 3) it should be increased through direct systematic instruction, 4) it should result in more positive perceptions of the student by others, and 5) it should commence at an early age to facilitate current and future inclusion in integrated settings (Baumgart et al., 1982).

Multilevel curricular selection can also be consistent with expanded models of participation such as Project SPAN (F. Brown, Evans, Weed, & Owen, 1987). When confronted with teaching behaviors that appear too difficult or seem inappropriate for students with severe disabilities, educators have sometimes limited their participation because they have focused on the "core" skills associated with activities. Exclusive focus on core skills limits the scope of behavioral routines to often have arbitrary beginning and ending points (F Brown et al., 1987). To address this concern, the Project SPAN model elaborates routines to include extension and enrichment components. Extension components examine the learner's ability to perform the following skills with regard to a particular activity: initiating, preparing, monitoring of quality, monitoring of tempo, problem solving, and terminating. Enrichment components explore the learner's ability to communicate, engage in appropriate social behavior associated with the routine, and indicate choices and preferences. (For a summary of data on student attainment of different components of routines, see Evans, Brown, Weed, Spry, & Owen, 1987).

Curriculum Overlapping

Curriculum overlapping is a variation on multilevel curriculum selection wherein the individually selected goals and objectives to be acquired within the context of a shared group activity are generated from different curricular areas (Giangreco & Meyer, 1988, p. 257). This concept essentially addresses the commonly expressed concern that many academic classes enrolling typical students are simply not relevant to the educational needs of students with severe disabilities. For example, the inclusion of these students in classes such as algebra, biology, or mathematics may be regarded as inappropriate because: 1) the curricular content is viewed as nonessential for the lifestyle needs of persons with severe disabilities (as it may be for many typical students as well); 2) the curricular content is regarded as beyond the cognitive capabilities of students with severe disabilities; and 3) even if the information were judged to be important and could be mastered, the modifications necessary for meaningful participation would be so extreme that the academic development of nondisabled students might be jeopardized (Brown, Long, Udvari-Solner, Schwartz, et al., 1989). In the Putnam et al. (1989) cooperative learning study described earlier, the student with severe disabilities was included in a science class in order to master individually appropriate educational goals in other curricular domains, such as social competence, communication, and mobility. To date, there have been virtually no other examples in the published literature of learner outcomes accomplished through the application of the principles of curricular overlapping in the regular classroom, though examples can be found in practice (e.g., Biklen, 1988).

Adaptive Instruction

Adaptive instruction is a comprehensive approach designed to accommodate diversity among students within regular classes that combines or is compatible with many practical and effective components from the aforementioned strategies of multilevel curriculum selection and curriculum overlapping (Wang, Reynolds, & Schwartz, 1988). According to Walberg and Wang (1987), adaptive instruction is based on the premise that "individual students learn in different ways and at varying rates, and a major task for schools is to provide educational experiences that accommodate these differences in order to optimize each student's education" (p. 113). Distinguishing features of the model include:

1. Instruction is based on the assessed Capabilities of each student.
2. Materials and procedures permit each student

to make progress in the mastery of instructional content at a pace suited to his or her abilities and interests.

3. Periodic evaluations of student progress emphasize feedback to individual students regarding mastery.
4. Each student assumes some responsibility for diagnosing his or her needs and abilities, for planning individual learning activities, and for evaluating his or her mastery.
5. Alternative activities and materials are available to aid students in the acquisition of essential academic skills and content.
6. Students have a choice in determining their individual educational goals, outcomes, and activities.
7. Students assist each other in pursuing individual goals, and they cooperate in achieving group goals.

Research involving students with mild disabilties has indicated that exemplary implementations of adaptive instruction programs are associated with achievement levels and classroom processes that are superior to those attained under exemplary traditional instruction (i.e., teacher-directed and group-paced instruction). Various programs are available – each of which has empirical support documenting positive outcomes for students with mild learning handicaps – that incorporate aspects of adaptive instruction, including the Adaptive Learning Environments Model (ALEM) (Wang & Birch, 1984), the Bank Street Model (Gilkeson, Smithberg, Bowman, & Rhine, 1981), and Team Assisted Individualization (Slavin, Madden, & Leavey, 1984). As ALEM has been widely implemented and evaluated in situations involving students with disabilities and is often discussed with reference to the regular education initiative in particular, it is described here in more detail.

ALEM has been field tested for more than a decade at the University of Pittsburgh and elsewhere in a large number of public and private schools (Wang & Birch, 1984). ALEM involves curricular and instructional modifications to support students with mild handicapping conditions and other students with learning difficulties in the regular classroom. Components of the model include: 1) a diagnostic-prescriptive monitoring system, 2) delabeling of mainstreamed special students, 3) provision of individualized assistance to all students experiencing learning problems based upon periodic performance data, and 4) teaching students self-management skills. The ALEM curriculum combines "direct" or prescriptive instruction with aspects of informal. or open, education thought to be conducive to the attitudes and processes of inquiry, social cooperation, and self-management for learning (Wang, Gennari, & Waxman, 1985). Although ALEM is a promising adaptive learning program model, critics have challenged the evaluation methodology utilized in early reports (Hallahan, Keller, McKinney, Lloyd, & Bryan, 1988). In addition, ALEM has not to date been systematically extended to address the ability of the model to include students with severe disabilities as well. In principle, of course, ALEM involves an alternative to group-paced instructional models, and might thus have considerable potential for providing the kinds of intensive, individualized learning activities needed to complement group experiences such as cooperative learning in the regular classroom.

Other Regular Education Curricular Modifications

Various other instructional arrangements have been described as having particular promise for instructing students with special needs in regular classrooms. In their review of research and practices, Nevin and Thousand (1987) identified several curricular and instructional approaches that would appear to be supportive of mainstreaming in principle: 1) "mastery learning" (Anderson, 1985; Bloom, 1977, 2) increasing academic learning time (Wilson, 1987), and 3) applied behavior analysis (Berkson & Landesman-Dwyer, 1977; Deno & Mirkin, 1977; Hating, Lovitt, Eaton, & Hansen, 1978).

PEOPLE RESOURCES

Education is first and foremost a labor-intensive undertaking, and the quality of a program is most certainly dependent upon the characteristics of the people involved. Human resources are possibly the most crucial component for the delivery of quality programs to children –

interestingly enough, they are also the least studied. At this point in time, while it appears that knowledge and skills regarding exemplary practices are important, even more important may be the ability of the adult personnel to operationalize collaborative teamwork principles in their interactions with one another and with their students.

Perhaps because the inclusion of students with severe disabilities in the regular classroom is so new, we could identify virtually no research regarding the organization of staff and other human resources to facilitate this process. There are, however, working papers, program descriptions, and informal reports of observations of schools and classrooms that have achieved full inclusion. For example, Fenwick (1987) described the advantages and disadvantages of various staffing strategies implemented at the Edward Smith School in Syracuse, New York, where students with autism and other severe disabilities have received special services in the regular classroom for many years. But no data have been provided to support the generalizations drawn regarding preferable practices to facilitate mainstreaming. There is, however, a growing professional literature empirically documenting the effects of various staffing patterns in mainstream services for students with mild disabilities. For example, considerable information is now available regarding components of effective consultation to the regular classroom teacher to meet individual needs (see Fuchs & Fuchs, 1989, for one such report, and Huefner, 1988, for a review of this research). Such evidence should be utilized as a starting point for the organization of staffing resources to support mainstream services for students with severe disabilities (see also Chapter 17, this volume, for a review of personnel preparation needs). In the interim, this final section of this chapter presents an overview of the issues and possible research directions for more formal investigation.

Teachers

At the heart of any regular classroom is the teacher. Managing and providing meaningful instruction to a group of 20-30 children or adolescents is a challenge regardless of the characteristics of individual students. When a student enters the regular classroom with curricular needs that differ from those of his or her classmates and may require intensive instruction, regular education teachers are confronted with a task for which they may be unprepared and that typically requires collaboration and support.

Within the framework of multiple supports, a crucial element of successful integration is for regular class teachers to assume ownership for education of the student with disabilities, just as they would for any other student on their class list. This ownership is vital to the development of an inclusionary climate in the classroom. From a practical standpoint, in order for the input of other school personnel to be truly supportive, the regular class teacher must play a significant role in guiding the process. Logically, whenever a student with disabilities is viewed by the teacher as someone else's primary responsibility, he or she is more likely to be socially and academically isolated within the regular class. Conversely, in classes where teacher behavior and verbalizations indicate ownership as the student's primary teacher, isolated or parallel education would be minimized and inclusion in class activities should be greater. However, we were unable to locate any research investigating the specific effects of teacher behavior within the regular classroom upon students with severe disabilities or their nondisabled peers.

As integration efforts have expanded, new roles have emerged for teachers as collaborators and consultants within the regular classroom. Collaborative team-teaching arrangements have emerged as one type of service delivery configuration designed to utilize the skills of both classroom teachers and teachers prepared to serve as resource consultants in particular specialized need areas (Fenwick, 1987). Thousand and Villa's (1989) recent review suggested that the critical elements for effective team teaching parallel those for cooperative group learning, including: direct interactions, interdependence, use of prosocial skills such as conflict management, communication, trust building, and individual accountability. Whether they are referred to as support facilitators (S. Stainback, Stainback, & Harris, 1989), methods and resource teachers (Campbell et al., 1988), teacher consultants (Huefner, 1988), or education specialists (Thousand et al., 1986), alternative positions

have been created and both special education teachers and master teachers with specialized skills are being retrained to fill such roles. For example, the University of Vermont initiated a post-master's degree-level (certificate of advanced study) training program in 1986 to prepare educational specialists (ES) to support students with intensive educational needs in regular classes. By the 1988-1989 school year, 20 educational specialists were serving students in 14 Vermont Supervisory Unions. During the 1989-1990 school year 35 educational specialists served more than half of Vermont's Supervisory Unions.

There are a growing number of districts and schools that utilize consultation and team-teaching staffing models to support mainstream placements for students with severe disabilities. The documentary Regular Lives, aired on public television in the United States in 1988, provided several examples of such programs (Biklen, 1988); and entire school districts in certain states in the United States and provinces in Canada now serve virtually all students with severe disabilities by providing consultation to regular class services. Nevertheless, systematic evaluation reports of the components of these efforts and outcomes associated with those components for students have not yet been published.

Related Services Personnel

In addition to consultant teachers serving as integration specialists, a wide array of related services providers are mandated to support the education of students with severe disabilities, including: occupational therapists; physical therapists; speech/language pathologists; and other professionals such as social workers, school psychologists, orientation-and-mobility instructors, nurses, and recreation specialists (as individually appropriate). Much of the service currently provided to students with severe disabilities by these related professionals has been characterized as direct and "pull out." isolated from typical instructional environments (PH. Campbell, 1987; Giangreco. 1986). As these students access regular classes, related services personnel will be called upon to support those educational programs with services that are compatible with regular education routines. Giangreco, York, and Rainforth (1989) argued that the first consideration for related services delivery should be carefully designed, indirect/consultative services if those services are to support integration (see also Giangreco, 1989b).

Paraprofessionals

Teacher aides or educational assistants have been used extensively to support students with disabilities placed in regular classes. Service delivery patterns for the use of teacher aides has followed three basic patterns: 1) one aide is assigned to one student full time, 2) one aide is assigned to a small group of students within the same class or school (typically, two to four students), or 3) two or more aides rotate responsibilities for both direct student support and other school duties (e.g., library support, cafeteria work, bus supervision).

Some parents and professionals have expressed concern that the assignment of aides may result in a situation where the least trained of the adults involved with the student has the most responsibility and may often be left to make many day-to-day decisions. Others are concerned that the overreliance on teacher aides interferes with the development of a sense of ownership by the regular classroom teacher for a student with severe disabilities who has a one-to-one aide assigned. While the use of paraprofessionals can be a valuable instructional resource. we could identify no systematic investigations that examined the impact of various paraprofessional service delivery configurations designed to support students with severe disabilities in regular classes. Thus, while documentation is unavailable, reports from school districts suggest that use of a full-time aide for a single student has serious limitations for both school systems and students. First, districts typically have difficulty justifying a full-time aide for every student with special needs placed in a regular class. Second, burnout among aides is said to increase and productivity suffer when their assignments are restricted to the same student exclusively. Third, the presence of a full-time aide for a student may be detrimental by creating unnecessary dependency or because the physical presence of the adult may interfere with the development of peer relationships (York, Vandercook, Caughey,

& Helse-Neff, 1988). The changing role of teacher assistants and the level of dependence upon their services will require modification and individualization in order to keep pace with the call for full inclusion into regular education.

Peers and Classmates

Traditionally, regular education peers have been engaged in both social interactions and peer tutoring relationships with students with severe disabilities (see Chapter 11, this volume, for a comprehensive review of the effects of these patterns upon children's social relationships). Peer tutoring programs have been reported as effective approaches for teaching students with disabilities in regular classes (Maheady, Sacca, & Harper, 1988), and research on this model has documented short-term benefits such as observable academic gains, the modification of undesirable behaviors, and increasing the amounts of individual attention a student receives (Krouse, Gerber, & Kaufman, 1981; Leyser & Gottlieb, 1981). However, as Krouse et al. cautioned, the long-term social effects of this practice have yet to be examined carefully, especially in terms of the ultimate impact of peer tutorial relationships upon peer cooperation and mutual concern.

A more recent development has involved including peers as members of planning teams for students with disabilities so that they become collaborators in educational decision making (Schattman, 1989; Vandercook et al., 1989). In schools in Minnesota, Vermont, and in various locations in Canada, some local planning teams have invited classmates to participate in the design of educational programs based upon the presumption that they have student-centered perspectives that would be relevant to meaningful educational planning. On a less formalized level than planning teams, students often are creative problem solvers who can assist teachers in designing ways for students to become meaningfully involved in regular class activities. Little is known about the effects of peers on planning teams and few procedures or guidelines are available to ensure that student confidentiality is maintained; furthermore, it would seem important that nondisabled students are not called upon to assume a level of responsibility that makes them uncomfortable. The inclusion of peers on planning teams and as classroom-based problem solvers has potential, but the process must ensure that the intended benefits are forthcoming and safeguards are in place; at least one systematic research effort involving peers in such roles is now ongoing and data will be available regarding various outcomes after a 2-year time period (I.M. Evans & C.L. Salisbury, personal communication, January 8, 1990).

Administrators

School administrators are a vital link in the development and maintenance of integrated education. some point in the process, changes must be reflected in board of education policies and practices in the form of budgetary accommodations, the redefinition of job roles and functions, and hiring practices (Canadian Education Association, 1985; (Giangreco, 1989a; Villa & Thousand, 1990). At a more immediate level, Villa and Thousand suggested that administrators must engage in a variety of supportive measures to facilitate integration, such as creating mechanisms for teamwork and consensus building to occur (e.g., through provision of release time), encouraging and rewarding creativity and collaboration, and developing peer-teacher support networks. Clearly, schoolwide or systemwide integration efforts will require the active support of district-level administrators, with school principals and special education counterparts serving as key people in school-level changes.

RESEARCH RECOMMENDATIONS

1. *We need to examine the effects of various components of full-inclusion models upon academic achievement, social-behavioral skills, social attitudes, and interpersonal relationships between children.* A great deal of research has been carried out in regular education settings where children with and without severe disabilities generally attended separate classes but were exposed to different interaction experiences, such as peer tutoring versus special friendship play relationships. Based upon these data, we can confidently state that virtually any form of structured contact has resulted in more positive attitudes and experiences than physical

exposure alone. There is also some evidence to suggest that less hierarchical friendship interactions will be associated with more positive outcomes than hierarchical tutoring relationships alone, where the nonhandicapped child's only experience with the child with severe disabilities is to serve as a peer tutor. In addition, social contact with non-disabled children has been related to increased mastery of IEP goals by students with severe disabilities, and the research on cooperative learning shows no ill effects associated with integration upon the achievement of nondisabled children participating in isolated learning experiences with children with moderate to severe disabilities (see Meyer & Putnam, 1988, for a comprehensive review of these data).

However, virtually all these data were collected for children who spent the vast majority of their school day in separate environments – that is, in different classrooms. To date, no evidence exists regarding the effects of different components of a full-inclusion model upon student achievement, attitudes, social competence, and friendships. For example, what kind of impact would involvement of typical peers in instructional planning (as in MAPS, Vandercook et al., 1989) have upon children's achievement, friendships, and so on? Would team teaching be more or less facilitative of student mastery of IEP goals in comparison to other staffing models, such as consultant teacher services? Which types of full-inclusion models would ultimately be associated with the development of informal social support networks in the community through the attainment of social competence, positive attitudes, and feelings of friendship by nondisabled children toward their peers with severe disabilities? Many other specific research questions might be and should be formulated once the actual components of various full-inclusion models have been articulated more clearly and field tested in schools and classrooms. But above all, as "integration" has always carried many different meanings ranging from mere physical proximity to actual structured contact between children, "inclusion" must be specified and the important variables relating to outcomes for children must be evaluated systematically.

2. We need some basis for achieving a balance between the needs of students with severe disabilities for intensive skill instruction and community-based instruction on the one hand and regular classroom integration and social interaction experiences on the other

Recommendations continue to abound regarding the percentages of time students with severe disabilities should spend receiving instruction in the community during the school day at various ages – that is, outside the school and thus away from nondisabled peers. These recommendations are based upon the more general evidence that students with severe disabilities do not easily generalize what they have learned in one environment (e.g., the classroom) to another (e.g., the criterion community settings), thus leading to the logical conclusion that new skills should be taught directly to students in those criterion settings – in the community. But while this might seem a logical conclusion, there are no data whatsoever to suggest how much community instruction at what ages is needed. Nor do data exist regarding any possible "costs" that such community-based instruction might incur to the extent that it involves more segregation from peers and the school community. It may simply be impossible to empirically validate the relative effects of spending varying percentages of time in school versus nonschool/community environments across the school years. Historically, this has been the sort of longitudinal research question that we have never been able to answer with any confidence because of both logistical complications and the multiple sources of (intended and unintended) influences upon learner outcomes.

Yet, while we may never acquire the experimental sophistication to answer such a question empirically, we clearly need to temper our eagerness to make enthusiastic and detailed prescriptions based solely upon the biases of the individual writer. Perhaps some combination of a more thorough theoretical exploration of the various implications would help, and researchers might collect some evidence regarding the potential of the school as a source of learning criterion skills at different ages. For example, does the elementary school include potentially valuable learning experiences such as social competence routines (e.g., turn taking, getting ready, finishing, and putting away) and essential early social interaction opportunities (i, e., being

being part of one's peer group) that do relate to skill mastery and valued social outcomes? How does this compare to the opportunities available to secondary-age students in school versus nonschool settings? In the interim as we await the results of such systematic study, social validation research might be conducted to support the kinds of practices we do implement for students. At the very least, we should have more information about the importance that parents and professionals place on different experiences for children. We might even try to find creative and valid ways to ask the children themselves .... And at some level, the question might not be unlike that personal balance that each of us strives to attain between "work" and "play" in our lives: How can we strike a similar balance for a child with severe disabilities?

3. Much more research and development is needed to validate those aspects of various curricular adaptation models that will result in positive educational outcomes for students. Within the past 5 years, we have witnessed the emergence of significant support for full inclusion-education for all children in the regular classroom – as a philosophical principle. Entire books have appeared discussing both the principle and the practice of full inclusion. And, we can point to examples of regular classroom instruction, with the needed instructional supports, for individual students with severe disabilities as well as for all students with severe disabilities in some schools and even entire school districts. Nevertheless, there is little that we can tell others about how best to modify and adapt curricula for these students based upon actual data regarding student accomplishments using those approaches. Good ideas such as overlapping curricular objectives to enable us to meet the needs of a student whose educational goals are greatly discrepant from his or her typical peers must be translated into guidelines that have been developed, field tested, and validated on behalf of real children in typical schools.

4. *Research is similarly needed on the effects of varied instructional practices and teacher behaviors upon the academic and social integration of students.* Again, only the research on cooperative learning and any generalizations we might draw from regular education initiatives such as ALEM (Wang & Birch, 1984) give us any help here. Cooperative learning as an instructional grouping strategy can be related to various positive social and academic outcomes for students in comparison to either individualistic or competitive structures. And ALEM provides one model of individualizing instruction for classrooms that reflect a considerable level of diversity. Areas that beg investigation, however, include the application of various technologies such as computer-assisted instruction (CAD and even combinations of technology and different grouping and goal structures. A variation of the early aptitude-treatment-interaction (ATI) research might be useful to explore the effects of different teaching styles upon the attainment of different educational goals for students. And finally, can we identify teacher behaviors and variations in teaching styles that are associated with positive learner outcomes and can be taught to teacher trainees and inservice teachers?

5. If community integration and participation is the ultimate objective of *our educational system, may need to reevaluate the individualized educational objectives traditionally posed both for students with disabilities and those without disabilities.* We know very little about the actual impact of having learned a particular skill upon the individual's success in criterion community environments. For example, we have long focused upon teaching persons with disabilities specific job skills that related to task performance, only to learn that employees most often lost their jobs for reasons that had more to do with social competence than the quality of their work. Vandercook's (1989) study is a rare example of a demonstration that learning a particular skill (e.g., how to play appropriately with an age-appropriate toy) was related to a desirable positive learner outcome (e.g., increased cooperative participation with nondisabled peers). Once again, our decisions about what to teach students – with disabilities and nondisabled – have been based more upon our individual biases and traditions than upon evidence that what students are learning really makes a difference in their lives. This situation is also unlikely to change unless we begin to specify the kinds of long-term, positive outcomes we expect for persons with severe

disabilities. In the absence of data, the "criterion of ultimate functioning" posed by L. Brown and his colleagues (1976) was a good start. By now, however, we could begin to track the effects of different emphases in students' IEPs upon their development and social adjustment. Documentation of long-term planning and systematic evaluation of various LEI' outcomes should be the focus of longitudinal research efforts and a requirement of daily practice at the state level.

6. *Validated system-change strategies are needed to assist schools, districts, and regions in their changeover from segregated models to integrated, full-inclusion educational models.* Special education research is historically rooted in educational psychology, a tradition that emphasizes the controlled experiment and intervention at the individual unit of analysis level. Ethnographic research paradigms and multivariate research technologies that allow for the documentation of multiple and unintended influences and effects must be expanded to evaluate systems-change efforts judged to show varying degrees of success. New paradigms or strategies for knowledge production might need to be developed to investigate complex systems-change issues that go far beyond the individual child, teacher-child dyad, or even classroom level. Our rigid adherence to certain paradigms in research and evaluation – reflected most clearly in publication and funding – must give way to increased willingness to utilize alternative evaluative methods that might be equally or better suited to answer the kinds of questions that continue to elude us.

7. *We need to better understand the ways in which professionals who have traditionally functioned as special and regular educators can work together to meet the needs of the diverse student population of today's schools.* Our school districts are staffed by teachers and other professionals who have a history of working with children in isolation from one another. The teacher education programs that train those professionals are similarly separate. How can we best prepare professionals who can both teach children well and work together and support one another in order to do even better? How do we generate both teacher attitudes and skills that support learning across the full range of students' abilities and needs? Closely related to this staffing issue is more intense scrutiny of the fundamental structure of classrooms: What would be the effects of alternatives to age-graded classes (such as family and other cross-age groupings more common in a country such as New Zealand) upon student learning, behavior, and social relationships? As we come to accept and value the diversity of today's student population, perhaps we can begin to evaluate more fundamental reforms and even major restructuring efforts that could better assist our school system to meet the needs of the children of today who will become the society of tomorrow.

SUMMARY AND CONCLUSIONS

As the field moves toward full-inclusion models in America's schools, we shall continue to confront the challenge of individualizing instruction to meet unique educational needs on behalf of students with severe disabilities. The status of regular class instruction – with special service supports and resources – is at a formative and crucial stage of development. Many educators have pointed to the values that support full inclusion, the clear and compelling failures of exclusionary and segregated models, and the logic of providing services to students in their neighborhood schools and classrooms as perhaps the most promising practice for the coming years. If regular class integration is to move beyond its current status as primarily an exemplary model available only in some regions to a very few children to one that is generally available, both systems-change research and systematic evaluations of the effects of our practices upon outcomes for children will be critical. Such research would not be focused upon whether we should integrate children with disabilities into the regular classroom with their peers – this is a value judgment regarding what we want our society to look like. Instead, research must be designed to gather the necessary information to help in the design of increasingly effective and creative ways to expand the educational and social opportunities to students with all levels of ability and diverse

needs. In combination with an inclusionary values base and sound logic and theory to guide us where data continue to be absent, research will continue to serve as an important impetus to shape educational and social policy and practice.

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