The School's Role in Educating Severely Handicapped Students

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by
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and
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One of the hallmarks of democracy in North America has been the development of an education system that provides free schooling to the children of all citizens — almost. We say "almost" because until recently children with severe handicapping conditions were excluded from the public schools because it was felt that they had a depressing effect on the other students, they made unreasonable demands on teachers' time, and they were unable to profit from instruction. In recent years, society has affirmed the right of all children, regardless of their level of intellectual functioning or socioemotional growth, to a free and appropriate education. The extension of equal educational opportunity to students with severe handicaps has generated much discussion over the goals of public education and controversy over the role of the public schools in educating the severely handicapped. Many questions have been posed: Can severely handicapped students be educated? Are the public schools responsible for providing programs for the severely handicapped? What service delivery models and instructional practices are needed?

The general public has little knowledge of the nature or needs of students considered to be severely handicapped. Since these children were formerly confined in isolated residential institutions or kept in seclusion in the home, nonhandicapped citizens have had relatively limited contact with their severely handicapped peers. Public attitudes toward the severely handicapped are characterized by misinformation, misunderstanding, pity, and fear. Educators who have had little or no experience with severely handicapped students share these negative perceptions; and efforts at establishing education programs for the severely handicapped in public schools have been hampered by both professional and community resistance.
In this fastback, we shall discuss the legal, ethical, and practical issues involved in providing educational services to students with severe handicapping conditions. And we shall describe the characteristics of severely handicapped students and the education program models and instructional practices currently in use. We have written this fastback with the belief that knowledge begets understanding; and understanding will lead to better education programs for severely handicapped students.
Are the Public Schools Responsible for Educating the Severely Handicapped?

The residential treatment model has a long history of providing services to severely handicapped individuals. Only in recent years have professionals and parents initiated efforts to provide services in community-based settings. As deinstitutionalization of the severely handicapped proceeds, more and more public schools struggle to cope with the demand for special services and appropriate programs. Out of this demand has come a redefinition of the meaning of public education in contemporary society.

Foundations of Public Education

Public education in North America was instituted to unify the many different ethnic and national groups who immigrated to this continent in response to economic, religious, and political pressures in their homelands. The purpose of schooling was to integrate individuals from a variety of cultural backgrounds into a functioning national unit with similar experiences, a single language, and a common belief system. Schools, provided at public expense and with mandatory attendance requirements, offered instruction in basic skills (reading, writing, and calculating) and common background knowledge (geography, history, and science). That the public schools were remarkably effective in accomplishing this goal is evidenced by the universal use of English as the standard language, a relatively high literacy rate, and the technological achievements of science and industry.

To a certain extent mass communications media, especially radio and television, have usurped the acculturation mission of the schools. Satellite communications enable citizens in all parts of the country and
abroad to obtain information simultaneously and immediately. This development has led many to question the role of the public schools in unifying diverse ethnic and social groups. But the schools serve other purposes. Many scholars have written about the relationship of education to economic growth. Political and industrial leaders have stated that fostering individual talents is necessary to ensure adequate human resources for an increasingly sophisticated technological society. At the same time, the civil rights movement has focused attention on the personal rights of each citizen to an education in a democratic society. Thus many view education today as a process for encouraging individual growth and achievement rather than as a means for transmitting cultural values.

Legal Mandates for Education of the Handicapped

The normalization movement, which asserts the right of handicapped people to live a life "as normal as possible," as well as the increasing influence of organized parent advocacy groups, led to a series of court decisions upholding the right of handicapped students to public education. In a landmark consent decree in 1972, the Pennsylvania Association for Retarded Citizens won the right for severely retarded students to attend the public schools in that state. Similar class action suits in several other states further extended the provision of public education programs to severely handicapped students and focused professional and community attention on the problem. The principle of "zero rejection" was proposed to require schools to accommodate education programs to the needs of the child instead of excluding children who are unable to accommodate to the demands of the school setting.

In response to these judicial mandates and the growing professional commitment to educating severely handicapped students, Congress passed in 1975 The Education of All Handicapped Children Act, which stated that all children were entitled to a free and appropriate public education regardless of handicapping condition. This law directed state education agencies to establish special education programs for all handicapped children, with priority to those not receiving services and those placed in inappropriate programs, that is, the unserved and underserved
severely handicapped student population. This law challenged assumptions about the ability of students with severe handicapping conditions to benefit from education programs and raised questions about the adequacy of existing instructional practices to meet the needs of severely handicapped students.

Special education was defined as curriculum and instruction specifically designed to meet the unique needs of each handicapped child (including classroom instruction, physical education, and home or hospital instruction) as well as related services required to enable the child to benefit from instruction (such as transportation, physical therapy, speech therapy, and medical treatment). School systems that failed to comply with the provisions of the law risked losing all federal funds.

Legal, Practical, and Ethical Issues in Educating the Severely Handicapped

Currently, the right of handicapped students to free, appropriate education is guaranteed only by federal statute (supported by state statutes in some instances). If the law were repealed or not renewed, the legal status of public school programs for severely handicapped students would be ambiguous. In several cases unrelated to the issue of education for the handicapped, the U.S. Supreme Court has failed to articulate education as a fundamental constitutional right, even while stressing the importance of education for success in the American economic and political system. In a few recent decisions, state courts have rejected the right to education for severely handicapped students in the absence of federal statutory protections. On the other hand, advocates have argued that education as a right is protected by constitutional guarantees of equal protection and due process. To avoid letting the determination of whether to provide education programs to severely handicapped students revert to the discretion of the individual states, professional and parent groups have proposed an amendment to the U.S. Constitution establishing a free and appropriate education as a basic right of all children regardless of race, sex, or handicapping condition.

One of the practical issues is the costs associated with providing education programs for severely handicapped students. The central
issue is whether public school systems are the most cost-efficient and cost-effective service delivery models for students with severe handicaps. Opponents argue that special education and related services are too expensive, since only five or six severely handicapped students are served by one teacher with the assistance of a paraprofessional aide and part-time support from other professionals, such as language clinicians, physical therapists, and medical technicians. On the other hand, a single teacher serves 25 to 30 nonhandicapped students. The educational progress achieved by severely handicapped students, even with intensive programming, is extremely limited when compared with the educational attainments of average students. Opponents of special education maintain that this is not a cost-effective expenditure of the public monies available for education.

Supporters counter that public school programs for the severely handicapped represent a reasonable use of public funds when compared with the expense of institutionalization and custodial care. The costs of residential treatment programs are higher, since taxpayer monies are required for personnel salaries; purchase of equipment, supplies, and food services; and building construction, operation, and maintenance. Nor do these tax monies take into account the emotional costs to handicapped individuals and their families when faced with separation and confinement or even the social costs of maintaining unproductive citizens at public expense. Special education is thus an economically feasible and socially desirable method for providing education services to the severely handicapped population.

Another issue is whether severely handicapped students are, in any sense, educable. The controversy revolves around the definition of education and reflects philosophical attitudes toward handicapped persons and ethical considerations. Opponents of education for the severely handicapped assert that education has to result in some measurable outcomes. Therefore, severely handicapped students, who do not benefit from the education program, may properly be considered ineducable, when ineducable is defined as failing to make demonstrable progress toward acquisition of appropriate skills following intensive instruction by trained personnel after a reasonable expenditure of time and effort. Such a pragmatic viewpoint holds that as long as there has
been an equitable allocation of personnel and material and financial resources in accomplishing the goals of education, it is justifiable to suppress individual needs to accomplish common societal goals.

PropONENTS argue that constitutional guarantees protect equal educational opportunity, not equal educational outcome. Furthermore, education is not so much a process of indoctrinating citizens with the prevailing cultural values as it is a means for developing each student's capabilities for his own as well as society's benefit. Students should not be presumed ineducable on the basis of a categorical label or a pessimistic prognosis. The ineducable can only be determined when appropriate, systematic, and long-term instructional programming fails to foster motor, social, and cognitive growth. In actuality, the failure of such intervention efforts represents as much the ineffectiveness of the service provider/delivery system as it does the incapacity of the severely handicapped student to profit from instruction. This optimistic view of universal educability stresses the importance of protecting the rights and interests of the individual and reflects the social ethic of helping all in order to improve society in general.
Who Are the Severely Handicapped?

Severely handicapped students are a heterogeneous group who differ widely in terms of physical impairments and behavior problems. Students like those described below might be found in a program for the severely handicapped.

Five-year-old Rita has Down’s syndrome, a chromosomal abnormality with severe physical manifestations that frequently occurs in children of older mothers. Rita’s large tongue, combined with a rhythmic involuntary tongue thrust, interferes with her eating. When food is placed in her mouth, her tongue pushes it back out or it runs down both sides of her mouth before she swallows. Although she can walk around and use her hands to reach toys and other objects, her poor motor control and awkward grasp interfere with self-feeding, dressing, and other daily activities. Rita makes an attempt to communicate by vocalizing, but her speech is characterized by misarticulations and rudimentary grammar.

Jason was diagnosed as an autistic infant when he was only five months old. At seven, he displays many classic symptoms of this disorder. His self-stimulating behaviors include hugging his knees and rocking, and waving his fingers in front of his face. He does not respond to other children or adults, although he shows some limited recognition of his mother. If he is approached or touched, he avoids eye contact by turning his head away or gazing down. Jason has never spoken and only responds to a few words that relate to eating, going out, or watching TV. His gross and fine motor skills are well developed for his age, but his emotional responses are erratic and often inappropriate, with frequent unexplained outbursts of tears or laughter.

Susan was born with spina bifida, a congenital defect in which the spinal cord protrudes through the spinal column. Early hydrocephaly (excess fluid in the brain) was corrected with a shunt, but it left her with an enlarged head and severe retardation. She has no bowel or bladder con-
trol and is partially paralyzed from the neck down. Susan self-stimulates by turning her head from side to side, but she does respond to voices and touch. At ten years of age, she has acquired almost no functional behaviors, and her ability to move body parts is so limited that she has not been taught even the most elementary self-care or motor skills.

After a long and difficult labor in which the oxygen supply was cut off (anoxia), Rodney was born with cerebral palsy, a condition in which damage to the motor center of the brain causes muscular impairment. Rodney’s hemiplegia (paralysis of one side of the body) and spasticity (increased muscle tone leading to contractions) have left him walking on his toes with an unsteady scissored gait that interferes with his daily activities as a twelve-year-old. The weakness in his left arm limits his gross and fine motor skills and he has difficulty controlling his jaw muscles, which causes him to drool. Rodney takes several medications to control his major motor seizure disorders, and they often make him drowsy and unresponsive. His speech is unclear, but his receptive language is good and he can perform many basic learning skills.

Jeff’s mother contracted rubella (German measles) during the first three months of her pregnancy and he was born with severe vision and hearing loss. At age fifteen, he still has temper tantrums when told to do something he does not want to do and often engages in aggressive behavior to intimidate others. He self-mutilates by hitting his head against the wall or biting his arms when he is upset or his wishes are thwarted. Although he responds appropriately to commands and follows directions when they are signed to him, his manual communication consists of only a few basic word signs. He can walk, feed, and dress himself with minimal assistance but performs no other tasks that could be used in recreational therapy or employment.

The variety of disorders and characteristics that constitute the severely handicapped population has made the development of a definition an elusive task. Because a number of professions work with severely handicapped students, the various approaches to definition reflect different theoretical conceptualizations of the nature of the problem and the need for treatment.

Defining the Severely Handicapped Population

Because severely handicapped students are first diagnosed by medical personnel, traditional definitions have focused on classification accord-
ing to specific diseases or syndromes (clusters of symptoms), such as Down's syndrome, cerebral palsy, or schizophrenia. However, individuals with the same condition may exhibit vastly different abilities and require significantly different intervention plans. Some students with cerebral palsy are severely retarded in both motor and cognitive development and need intensive medical treatment and educational programming. Others are motor impaired but possess average or above average intellectual abilities, which enable them to succeed at post-secondary education and professional employment. Classification by medical categories has not proven useful for determining educational needs because students with similar impairments may have dissimilar learning deficits and styles.

As education programs for handicapped students were implemented and eligibility criteria for programs were developed, severely handicapped students were often excluded by definition. Students with multiple-handicapping conditions were not adequately served by a single program area, since personnel were not trained to work with the additional handicaps and appropriate equipment and materials were unavailable. Deaf-blind students, for example, were taught mobility skills and braille reading in programs for the blind, but had insufficient visual acuity to profit from communication and social skills training, which is conducted via demonstration. Mentally retarded students who were also physically handicapped lacked opportunities for physical therapy or adaptive physical education. Other students were excluded from education programs because they had not acquired skills, such as toilet training, self-feeding, ambulation, and basic communication, required for entry into traditional special education programs. All of these students were considered as candidates only for custodial training programs because of their failure to meet predetermined eligibility requirements for special education services.

When Congress mandated establishment of public school programs for handicapped students, an attempt was made to operationalize the definition of severely handicapped by using observable characteristics frequently exhibited by these students. Severely handicapped students were described as those students who were not toilet-trained; could not feed or otherwise care for themselves without assistance; did not attend
to social or environmental stimuli; engaged in self-stimulatory or self-injurious actions; did not give signs of being able to see, hear, walk, or speak; and manifested life-threatening medical problems. Specification of observable behaviors proved a more useful technique for determining the appropriate educational placement of students with severe handicapping conditions.

An alternative approach to definition is based on the student's need for educational intervention. The more severe the handicapping condition, the greater the emphasis on independent living skills and social relationships with others. Additional handicaps have more than a simple additive effect; they increase both the degree of overall impairment and the number of developmental areas affected.

Severely handicapped students exhibit significant chronic impairments in all major areas of life functioning, including mobility, self-care, communication, and learning. While students with mild handicapping conditions are expected to function independently as adults with minimal educational intervention, those with severe handicaps require extensive (variety of services) and intensive (degree of effort and application) intervention plans. Students who need instruction primarily in the basic skills of fine and gross motor development, self-care, beginning communication and social interaction, and preacademic learning, then, are considered severely handicapped regardless of the physical, developmental, or behavioral characteristics they display.

The definition developed by the federal government for purposes of administering federal policies incorporates both the observable characteristics and the need for educational intervention models, and it reflects current professional thinking:

A severely handicapped child is one who because of the intensity of physical, mental, or emotional problems, or a combination of such problems, needs educational, social, psychological, and medical services beyond those which have been offered by traditional, regular and special educational programs, in order to maximize his full potential for useful and meaningful participation in society and for self-fulfillment. Such children include those classified as seriously emotionally disturbed (schizophrenic and autistic), profoundly and severely mentally retarded, and those with two or more serious handicapping conditions such as the mentally retarded deaf, and the mentally retarded blind.
Such severely handicapped children may possess severe language and/or perceptual-cognitive deprivations, and evidence a number of abnormal behaviors including: failure to attend to even the most pronounced social stimuli, self-mutilation, self-stimulation, manifestation of durable and intense temper tantrums, and the absence of even the most rudimentary forms of verbal control, and may also have an extremely fragile physiological condition.

This definition contains three critical features:

1. The handicap is severe due to the intensity of the impairment or the presence of multiple handicapping conditions.
2. The student requires programming that demands greater use of resources than traditional programs in regular or special education.
3. The student needs instruction in basic skills for independent functioning and control of behavior that is dangerous to self or others.

Although the number of severely handicapped students is difficult to determine, authorities have estimated that anywhere from one-tenth of 1% to 1% of the total population can be categorized as severely handicapped. This low incidence means that concentrated numbers of severely handicapped students will only be found in larger school districts; small rural districts may identify only one or two individuals who qualify for programs for severely handicapped.

**Characteristics of Severely Handicapped Students**

The severely handicapped have a range of physical, developmental, or behavioral problems that can have a devastating effect on many aspects of their lives. They typically exhibit some or all of the following characteristics:

*Physiological Characteristics:*

1. Congenital defects resulting from inherited traits, genetic accidents, improper or inadequate prenatal nutrition or medical care, birth trauma during labor and delivery, or postnatal accidents or infections (e.g., mental retardation, vision and hearing defects, physical impairments, and brain damage)
2. Physical or neurological impairments, including convulsive disorders, abnormal reflex patterns, abnormalities of muscle tone, deformities of bone structure, metabolic disorders, and facial or limb disfigurement.

3. Health problems related to congenital defects and neurophysiological impairments, including serious heart malformations, diabetes, chronic lung disease, diarrhea or constipation, and nutritional deficiencies.

**Developmental Disorders:**

1. General maturational level of one-half or less than that expected on the basis of chronological age (i.e., a severely handicapped child of ten may demonstrate motor, social, and cognitive skills typical of a nonhandicapped five-year-old).

2. Severe retardation of physical development, including failure to acquire head and trunk control, inability to maintain a sitting or standing position, lack of locomotor ability (walking), and limited gross and fine motor skills.

3. Severe retardation of sensory development, including lack of an orienting response to visual, auditory, or tactile stimuli; inability to track objects or sounds; and inadequate vision and hearing abilities.

4. Severe retardation of cognitive development, which may be unmeasurable by standardized measures of intellectual functioning but is usually represented by a range of IQ scores from 0 to 55.

5. Severe retardation of social-emotional development, including failure to respond to social stimuli (lack of affect), negative reactions to social stimulation, inappropriate emotional responses, and rapid or erratic changes of mood (emotional lability).

**Behavior Disorders:**

1. Self-mutilation: repetitive behaviors that inflict physical damage to the body such as head banging, hand biting, hair pulling, eye gouging, and scratching of the face or limbs.
2. Self-stimulation: repetitive behaviors that provide continuous visual, auditory, tactile, or kinesthetic stimulation such as rocking, hand flapping, teeth grinding, finger strumming, and masturbation

3. Ritualistic behaviors: repetitive and compulsive sequences of behaviors that must be performed prior to certain activities or an emotional outburst will occur (e.g., the student must sit in a favorite chair in a specified location, or certain objects must be organized in a precise arrangement before work may begin)

4. Bizarre vocalizations: patterns of vocalizing that are nonfunctional and call attention to themselves, such as echolalia (repeating the same phrase over and over), pronomial reversal (confusing pronoun forms of "I" and "you"), and idiopathic speech (using nonstandard word forms and utterances unique to the individual)

These physical, developmental, and behavioral impairments require a specialized curriculum and intensive instructional methodology prescribed and adapted to meet the needs of each individual student. Such curriculum and instructional demands cannot be met through traditional special education programs.
What Can We Teach the Severely Handicapped?

The belief that severely handicapped individuals are incapable of any learning was dominant through the first half of the twentieth century. This view was not seriously challenged until 1949 when Paul Fuller published his account of the "operant conditioning of a vegetative human organism" in the *American Journal of Psychology*. By today's standards, Fuller's success in teaching a simple arm movement by providing milk as a reward seems a small accomplishment, but it was adequate to shatter the myth of the unteachable student. Educators would soon be forced to give greater consideration to the appropriateness of their teaching procedures and less to the apparent limitations of the learner. Although progress was slow at first, the boundaries between groups of retarded students classified as "educable" (IQs from 50 to 75), "trainable" (IQs from 25 to 49), and "custodial" (IQs below 25) began to fade as more demonstrations of successful training and education of severely handicapped individuals followed. Ironically, Fuller's objective in selecting a severely handicapped subject for his work was not to prove the learning capabilities of severely handicapped individuals. His goal was to demonstrate that operant techniques used in animal experiments could also be used with humans. His concept of the severely handicapped individual "at the bottom of the human scale" led him to believe that selecting a severely handicapped subject would bridge the gap between infra-human and human subjects. Despite Fuller's concept of severely handicapped people as less than human, his work provided the impetus for many of the beneficial changes that followed.

During the next decade operant psychologists continued to work with human subjects. Following Fuller's example, many chose severely
handicapped individuals as subjects. During the Sixties, the focus of research became more practical. It no longer seemed meaningful to teach arbitrary arm movements, and investigators began to demonstrate that severely handicapped individuals could be taught more functional skills (e.g., toileting, dressing, eating). Concurrently, the technology required to teach severely handicapped students began to be disseminated from the psychology laboratory through personnel preparation programs to schools and institutions. Education of the severely handicapped was no longer an esoteric science restricted to a few; it was now becoming a practical reality.

During the late Sixties and early Seventies, several other changes began to take place. Advocacy groups intensified their efforts to improve the lives of the severely handicapped. They not only exposed the brutal realities in custodial institutions but were able to propose constructive alternatives, using new advances in teaching techniques. At the same time that court decisions and new legislation were mandating education for severely handicapped students, the job market for regular teachers was declining in many parts of North America. The market had become saturated; there was a surplus of teachers. However, this dismal economic situation proved to be a boon for special education. As regular education positions became scarcer, special education positions became more attractive. Colleges and universities began to retool to meet this new demand for teachers of the handicapped, and education of the severely handicapped became a priority.

The integration of operant conditioning techniques with other educational methods proved to be valuable for educating severely handicapped students. The formulation of precise behavioral objectives, task analysis, and other individualized instructional techniques combine to form a powerful teaching process. Previous assumptions about what might be taught to severely handicapped students are revised regularly as a result of new developments in education. Children who were once considered incapable of speaking now can not only speak but sometimes can learn to read and write. Adults who once were considered incapable of self-care now can not only dress and groom themselves but sometimes can participate in gainful employment. Unfortunately, not every severely handicapped student experiences this level of success; and when
educational gains do occur, it is often only after intensive efforts. The
day-to-day practice of educating severely handicapped individuals fre-
quently lags behind the rapidly progressing state of the art. Thus when
examining what we can teach severely handicapped students, we must
consider both the state of the art and the state of the practice.
The State of the Art

Determining curriculum content for a severely handicapped student is an individualized process. Although many published curricula are available for the severely handicapped, the unique needs of each severely handicapped person have to be considered first. For example, Mary and John are both severely handicapped first-graders. Mary is deaf, blind, and severely spastic. She appears to have moderate to severe mental retardation, although this is difficult to assess due to her other handicaps. She lives on a farm with her parents. John has no apparent motor or sensory deficits but is profoundly mentally retarded and exhibits some problem behavior, such as biting himself and banging his head. He lives in a high-rise apartment with his grandmother. There might be some common educational objectives for both these children, but each will require different approaches. Since it requires considerable investment of instructional time to teach any objective, it is essential that objectives be selected carefully.

Structuring the Curriculum

Some curricula are developmentally structured; objectives are sequenced to parallel the way in which nonhandicapped children typically acquire skills. Currently, however, the developmental approach has been rejected by most educators of severely handicapped students in favor of the remedial approach, which does not require a fixed sequence of objectives. The advantage of the remedial approach is that it allows the child to skip objectives that are not really necessary. For example, a three-year-old child who has been tube fed from birth might learn to drink from a cup. The developmental approach would teach nursing from a bottle first; the remedial approach would skip this step. Because the child is already behind in the developmental sequence and since it is
likely that more time will be required to teach each step, omitting any unnecessary step is essential if the child is to make progress. While it was once believed that many of the earlier steps in the developmental sequence were prerequisites for later steps, remedial programs have proved that many of the earlier steps are not essential.

A second reason for favoring the remedial over the developmental approach is the need for age-appropriate activities. According to the principle of age appropriateness, individuals should be engaged to the maximum extent possible in activities appropriate to their chronological age. In the past, severely handicapped adolescents and adults were often encouraged to participate in childish activities that were considered appropriate to their “developmental ages.” This practice often made individuals appear more abnormal than they would otherwise. For example, at a state institution serving men sixty years old and older, the men spent their free time watching television, bowling, playing horseshoes, and looking at magazines. A few played cards or checkers. Some smoked pipes or cigarettes. When a women’s community organization volunteered to assist with the recreation program, the women engaged the men in children’s games such as ring-around-the-rosie. Having the “mind of a three-year-old” does not make it any easier for a sixty-year-old to fall on the floor and get back up again!

An alternative method of identifying appropriate instructional objectives is called the ecological inventory. In an ecological inventory, the environments in which a student must function are surveyed to determine what skills the student will require in each environment both in the present and in the future. For example, current environments for a sixteen-year-old severely handicapped girl might include her home, her classroom, a recreation center, restaurants, a respite center, and the schoolbus. Future environments might be similar but could also include a sheltered workshop, a group home, and public transportation. Of course, identifying current environments is much easier than predicting future ones; but since preparing for a new environment may require a long training period, it is essential to make predictions as early and accurately as possible.

Each environment is studied, usually by direct observation, to determine the skills and responses that it requires. For example, a trainer
preparing a student for a vocational setting will visit that setting and observe that workers arrive at a specified time, find their own time cards and punch them in the time clock, go to their assigned work stations, and work independently for a specific period of time. Once the critical skills for independent functioning in the new environment are identified, the list of critical skills can be compared with the student’s current repertoire of behavior. Perhaps some of the critical skills have already been mastered and can be eliminated from the list of skills to be taught. The remaining critical skills then serve as the basis for instructional objectives.

Sometimes, not every critical skill can be taught. For example, a student may be able to master most of the required workshop skills, but lacks the visual acuity to recognize his name on his time card. In such a case, a functional alternative, such as marking his time card with distinctively colored label tape, may be all that is required. It is best to keep such environmental modifications to a minimum because they increase dependence, but they can be extremely helpful when used sparingly.

The goals derived from the ecological inventory are incorporated into a student’s Individual Education Plan (IEP). An IEP is an organizational tool for outlining the educational process for each handicapped child. It must include information about 1) the student’s current level of performance, 2) annual and long-term goals, 3) specific short-term instructional objectives, 4) the specific special education and related services needed, 5) dates for initiation and completion of services, 6) the amount of time spent in regular school activities, and 7) evaluation procedures for determining if objectives are met. The IEP should be constructed in two stages: first, a Total Service Plan is made to determine what kinds of services are needed and who should supply them; and second, an Instructional/Implementation Plan is made with input from staff who will be providing the services in order to determine more specific objectives and methods of achieving them.

**Selecting Instructional Procedures**

How students are taught is as important as what they are taught. While a detailed description of teaching methods for severely handi-
capped students is beyond the scope of this fastback, a brief discussion of some major instructional procedures follows.

Normalization is a term used to describe an influential trend during the past two decades. Normalization, in its simplest terms, is the belief that normal behavior develops in normal environments. It implies that much of the deviant behavior exhibited by handicapped individuals stems from their "special treatment" and not from their handicap. In its most radical application, this would mean providing no special education services or other accommodations and placing the same expectations on handicapped persons as on their nonhandicapped peers. Radical normalization is not really applicable to the severely handicapped individual. Profound mental retardation, severe cerebral palsy, and blindness are handicapping conditions requiring extensive intervention measures; ignoring them will not make them go away.

Nevertheless, the concept of normalization is useful for severely handicapped students if not carried to extremes. It advocates keeping life as close as possible to normal, with special treatment if, and only if, clear benefits for the student can be demonstrated. If no advantage follows from special treatment, the more normal alternative is preferred. With this "as close as possible" guideline, the benefits of special education services for the severely handicapped child are adequate to justify them. If it is not possible to demonstrate any benefit to providing services in a segregated, residential setting, then a regular public school setting is preferred. Actually, the more normal settings do have distinct advantages. Interactions with nonhandicapped peers provide important models for handicapped students. Because our ultimate goal is to prepare every individual to function in an integrated social environment, an integrated school environment provides the best preparation.

Operant conditioning is also a major instructional procedure for educating severely handicapped students. As described earlier, the influence of operant conditioning with the handicapped can be traced back to Fuller's work; and out of it have evolved training techniques for behavior shaping, reinforcement, and other instructional approaches. Research in operant conditioning has helped special educators to understand the phenomenon of "learned helplessness." Learned helplessness occurs when an individual repeatedly experiences failure in
attempts at controlling the environment and then gives up making these attempts, eventually becoming extremely passive. Although cognitive, sensory, and motor impairments of severely handicapped infants and young children do interfere substantially with attempts at communication, movement, and other basic behavior, parents, teachers, and other caregivers often compound the problem by trying to anticipate the child’s needs, thereby encouraging a more passive role. However, when investigators using models from basic research began requiring participation from a very early age and provided children with toys and other stimulating devices that were modified to allow control, children became more responsive and less passive. Their increasing participation in the world around them provided a basis for improved learning in many areas.

Task analysis is closely associated with the behavioral approach of operant conditioning. Task analysis divides any complex task into a sequence of smaller steps. In turn, each of the smaller steps can be subdivided into even smaller units, if necessary. Breaking the task into component steps allows teaching each simple step separately, if needed, and then teaching the sequence. Some tasks are best taught by forward chaining (teaching each step in the same sequence that it normally occurs in the chain). Others are best taught by backward chaining (teaching the last step in the sequence first, then adding the next to last plus the last, and adding each previous step until the entire chain is taught). Even when the whole task is taught as a unit, task analysis allows the teacher to observe precisely which components have been mastered and which may require possible alteration of the teaching method.

Precise data collection is another essential aspect for successful teaching of severely handicapped students. Formative data collected as part of the daily instructional program allow for frequent evaluation and revision of instruction. On-going evaluation and revision is essential for effective instruction of severely handicapped students because instructional time must be used efficiently and because even apparently well-designed programs do not succeed with every severely handicapped child.

The direct instruction model has also contributed to improved education for severely handicapped students. By breaking the instructional
cycle into specific components, such as getting the child's attention, directing that attention toward the task, letting the child know what kind of response is wanted, and letting the child know when to respond, teachers can determine more precisely what is required to produce learning. Also, once the student learns a basic instructional cycle, the same cycle can be used to teach a wide variety of specific tasks. This model and other advances in teaching technology have produced significant improvement in the education of severely handicapped students.

Because students with severe handicapping conditions require a wide range of services in addition to education, a team approach to service delivery is preferred. The special educator is viewed as a coordinator for the array of services offered, providing direct instruction as well as obtaining medical treatment, physical and occupational therapy, speech and language intervention, adaptive physical education, and social welfare services when needed by individual students. The role of parents is, of course, critical; and efforts to integrate home and school learning have produced excellent results. Consultations and group meetings allow opportunities for professionals and parents to exchange information, discuss progress and problems, and formulate mutual goals.

A transdisciplinary approach often is used to coordinate the efforts of the many individuals working with each severely handicapped student. The transdisciplinary model involves more than simple sharing of information among professionals. It requires them to go beyond their traditional roles and to provide services traditionally reserved for other specialists. The teacher, following consultation and instruction, may provide speech therapy, physical therapy, and a number of other specialized services. At the same time, physical therapists and speech clinicians may work in their treatment programs on educational objectives such as self-care tasks or preacademic skills. While the legal and administrative issues raised by this model may not be resolved easily, the benefits to severely handicapped students have been well documented.

A program using the transdisciplinary approach might operate in the following manner:

Terry is a nine-year-old boy with severe motor and language impairments due to cerebral palsy. He is enrolled in Jack King's class for severely handicapped students. Jack focuses his instruction on basic concepts such
as body parts, colors, and object labels. The speech clinician has given Jack follow-up exercises to work on Terry's misarticulations, which supplement her daily training activities. In turn, she has adapted her materials to include work on the preacademic skills specified by Jack. The physical therapist works with Terry three mornings a week. He includes simple conversation about body parts during his movement exercises. He has also taught Jack the appropriate positioning and handling techniques to reduce Terry's physical limitations. Terry's parents have also learned to position Terry for his comfort and growth, and they use simple tasks to reinforce skills learned at school, such as working on object labels during mealtimes and body parts when getting Terry dressed to go out.

A final attribute of successful education programs for the severely handicapped is integration, which has come about with the shift from institutional settings to public schools settings. While the amount of integration of severely handicapped students with their nonhandicapped peers in public schools differs greatly, the nonhandicapped students provide essential role models and help create an appropriate social milieu in which their handicapped peers can learn. Although full-day integration may not be practicable, many school activities can be integrated easily.

Integration, transdisciplinary service delivery, family involvement, direct instruction, operant conditioning, normalization, and ecological inventories are all elements in the effective training of severely handicapped students. Still, the state of the art is imperfect; and while some students make remarkable progress, others progress slowly in spite of the best efforts. Unfortunately, many education services for the severely handicapped clearly are inferior to the best that current technology can offer.
The State of the Practice

There are many reasons why the education of severely handicapped students often lags behind the state of the art. Among the most important are the variables in the training and certification of teachers. Until recently, few postsecondary institutions provided specific training for teachers of severely handicapped students. Training programs in special education often prepare teachers with generic skills that are useful with severely handicapped students, but these programs cannot devote adequate time to the specific skills needed to teach severely handicapped students effectively.

Many states and provinces have failed to establish specific certification for teachers of severely handicapped students, yet teachers without specific training frequently are hired to teach severely handicapped students. When properly trained teachers were scarce, administrators often opposed specific certification because it made hiring more difficult. Also, when administrators believe that these students cannot learn much anyway, then hiring properly trained teachers is not considered essential. When a teacher surplus occurs, teachers associations often are strongly opposed to more specific certification because it reduces teacher mobility from job to job. Without specific certification requirements, teachers may be transferred to teach severely handicapped students regardless of the teachers’ lack of training in this area. If progress is to be made in serving severely handicapped students, it will require more stringent standards and inservice training to upgrade the skills of teachers already in the field.

The practice of transdisciplinary teamwork also falls far short of the ideal in many schools. In some localities, occupational therapists, physical therapists, and other vital team members are difficult to
recruit; and those who are available may have no training or experience with severely handicapped children. Even when appropriate staff have been recruited, developing an effective transdisciplinary team may be difficult. Preservice training rarely prepares professionals in different disciplines to work together effectively as a team. Administrative and supervisory procedures often discourage cooperation because professionals in different disciplines often are responsible to different supervisors. The result often is a fragmentary approach to training and therapy rather than a cohesive program. While many effective teams have been able to overcome these obstacles, the process could be facilitated by including effective teamwork techniques in preservice training for all the disciplines involved and by developing administrative procedures that encourage greater cooperation among professionals.

Integration of the severely handicapped also remains far from complete. More than 100,000 severely handicapped children and adults in North America remain in institutions in spite of a massive deinstitutionalization effort over the last 20 years. Actually, it has been the least handicapped residents of institutions that have been integrated into the community; those that remain in institutions are generally the most severely handicapped of all. And if, as some suggest, institutions will remain for the foreseeable future, we must improve treatment and services within institutions as well as in the community.

Even within public school systems integration is proceeding at a slow pace. The zero-rejection principle has been achieved by many school systems, but others remain far short of this goal. The problem often is more difficult for rural school systems because they encounter few severely handicapped students; therefore the cost per student for establishing appropriate services may be extremely high. Where classes for severely handicapped students have been established in public schools, they are not always well received. Research indicates that simply placing a class of handicapped students in a school is not enough; specific procedures must be applied to obtain true acceptance and to foster meaningful integration.

A final influence on the delivery of services is the role of advocates. Severely handicapped students need advocates. Parents, charitable groups, professional organizations, teachers, social workers, and a host
of others have served this role and generally have been in agreement on goals for the severely handicapped student. However, determining who should speak for the severely handicapped individual is not always a simple decision. For example, some parents have decided that lifesaving surgery should be withheld from their severely handicapped child because they believe the quality of the child’s life does not justify prolonging it. Courts have been inconsistent in ruling on such cases, and children often are “allowed” or “assisted” to die without the courts ever being consulted. In other cases, such decisions are made by health care professionals, sometimes without parents being made aware of the decision. While decisions concerning the education of severely handicapped individuals may be less traumatic, the process for making these decisions has not been perfected. Specific procedures are needed to ensure due process protection of severely handicapped individuals’ best interests.

When viewed as a whole, the state of the practice of educating severely handicapped children remains inconsistent. Some children receive state of the art services; others receive no education at all. The majority receive something in between. However, it should be remembered that most of these services began within the last decade, and virtually all of them started in the last two decades. Progress during these 20 years has been rapid; and if this rate of progress can be maintained, the best services available today may seem primitive within the next two decades.
What Can Severely Handicapped Students Teach Us?

It should not be necessary for a society to justify the investment of its resources in the education of any child. Public education is so much a part of our way of life, it would be difficult to imagine our society without it. Similarly, providing appropriate education to severely handicapped students should require no special justification; yet some have argued that because it is so expensive it cannot be justified, since few of these students can be expected to enter the productive labor force. In fact, increasing numbers of severely handicapped individuals do have productive jobs either in sheltered workshops or in competitive employment. Even for those who never attain employment, the increased self-sufficiency gained through education may reduce society’s future costs of care. For example, institutional care often costs more than $40,000 per year per client. A lifetime spent in an institution generally costs society in excess of $2,000,000. However, if an individual can be made self-sufficient enough to remain in the community, the cost of care may be at least 25% less. The $500,000 that is saved will probably be much greater than the cost of all the education services provided. However, such comparisons should be irrelevant since economic tests are rarely applied to other students to determine if their education is justified. If we are to fulfill our commitment to universal education, the severely handicapped cannot be excepted.

Our concept of public education should be broadened. We can no longer consider education as simply the transfer of specified curriculum content. The content of the curriculum must be shaped by individual and environmental requirements. The techniques for individualizing content, developed to meet the needs of handicapped students, may teach us new ways for meeting better the needs of nonhandicapped
students. For example, the phenomenon of learned helplessness in severely handicapped children discussed above also applies to any student who stops trying after repeated failures. Structuring the environment for learning with the fewest possible errors can be vital in preventing learned helplessness, whether the goal is self-feeding or learning mathematics. The high degree of structure, careful data collection, and small instructional steps used in teaching severely handicapped students create laboratory-like conditions in which some basic educational phenomena can be investigated. With appropriate adaptation, these findings may prove useful in many areas of education. Techniques for individualizing curricula, for training in the functional environment, and for task analysis will improve future education for all students.

The integration of severely handicapped students into public schools may also be a learning experience for society. While schools mirror our broader society, they also help to shape it. The integration of students with every level of ability into school programs that stress cooperation and positive interactions may help to build a more accepting society.

Severely handicapped students include many different individuals for whom regular education and traditional special education programs generally have not been successful. The philosophical and legal mandates associated with a free and appropriate public education require that they be served in our schools. Through the identification of new educational procedures in the past three decades, great strides have been made in the quality of education services that can be provided. Although the state of the practice in many areas remains less developed than the state of the art, services in the great majority of schools have improved dramatically in the last 10 years and continue to improve. Society's investment in providing these services is justified both by the increased independence of the individual students and by the increased knowledge of the basic learning process that has been acquired through the specialized programs developed for the severely handicapped.
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