

# FOCUS ON EXCEPTIONAL CHILDREN

## GENERAL PRINCIPLES AND GUIDELINES IN "PROGRAMMING" FOR SEVERELY HANDICAPPED CHILDREN AND YOUNG ADULTS

*Norris G. Haring, Alice H. Hayden, G. Robin Beck<sup>1</sup>*

### PROGRAMMING FOR THE SEVERELY HANDICAPPED

Developing programs for severely handicapped persons has become the challenging responsibility of educators. While it would be foolhardy to insist that educators alone can or should implement programs designed for severely handicapped persons, this fact remains: As a result of recent legislative mandates, court decisions, and accompanying social trends for change, educators are now on the front line in efforts to change centuries of neglect and mismanagement of severely handicapped persons. And they are the only professionals required by law to be there.

If the challenge is immense, so are its attractions. It would be hard to imagine a more interesting set of problems to try to solve or questions to address. We have purposely chosen to use the term "program" in this paper since it emphasizes both the *process* and the *content* required in planning classes for severely handicapped pupils. "Programming" as a process requires, first, the application of principles which may be as old as time but which were first formally articulated earlier in this century and, interestingly, which were applied as long as two decades ago to the instruction of *institutionalized* severely handicapped persons. As educators have become more experienced in teaching severely handicapped children, they have become aware that the increased precision made possible by systematic arrangement of instructional cues, following the principles of programmed instruction, has powerfully increased the effectiveness of the instruction of these children and young adults.

Second, in applying these principles to educational programming in classrooms rather than in institutions, it is necessary to expand traditional practices extensively. For instance, in our curricula, we now need to include behaviors which have rarely before been included in "school" curricula, behaviors which may occur in infancy, including respondents. Moreover, there is now an additional person with a significant role in the classroom—the parent.

---

1. Dr. Haring is Director, Experimental Education Unit, Child Development & Mental Retardation Center, University of Washington, Seattle. Dr. Hayden is Associate Director, Experimental Education Unit, and Director, Model Preschool Center for Handicapped Children, University of Washington, Seattle. Dr. Beck is Pediatric Consultant to the Experimental Education Unit, University of Washington, Seattle.

Third, since the severely handicapped child now entering public school programs may have many bizarre behaviors and medical problems, the educator is challenged by the need to apply the very latest tactics—or to devise new tactics—for modifying these behaviors and for managing medical problems *in the classroom*.

Finally, because severely handicapped pupils are more likely than others to have lifelong multiple problems, any programs developed for classroom application must be seen as part of a more global strategy that includes access to resources involved in the *comprehensive* management of these children. It is no accident that the authors of this paper represent more than one discipline.

### PRINCIPLES OF "PROGRAMMING"

In the middle of this century, a flurry of interest in the formal principles of programming arose when Skinner and Holland, among others, applied experimental results to human learning and stimulated interest in "process" with the further development of teaching machines and programmed materials, with and without hardware. These materials have been used in government and industry, but have also been applied in instructional settings. But in 1975, programming may sound like a dated and mech-

anistic way of describing what happens in a classroom. Yet it is fair to say that the *principles* of programming have always been inherent in good teaching. The underlying rationale in programming, or in any systematic teaching, is that waiting for the vagaries of genetic endowment, experience, and "accidental curriculum" (or "discovery") to be expressed as "learning" is *inefficient*. So it is worth reiterating that while the term programming and the automated presentation of material are no longer popular, the basic principles or rules which were developed and articulated in programming material for instructional purposes are really the basis for effective teaching and the subsequent development of an educational technology. These rules have special relevance in programs for severely handicapped children.

1. Measure entering behavior (developmental level).
2. Specify terminal behavior (the particular skill or set of skills to be learned).
3. Require an active response by the pupil.
4. Arrange small, sequential steps to achieve the terminal behavior in order to maximize the opportunities for success.
5. Build in periodic review of skills already learned (for instance, through drill and practice).
6. Withdraw discriminative stimulus systematically by shaping generalization and differential discrimination skills.
7. Systematically measure progress throughout program (precise data collection).

### Classroom Application

Using the general principles noted above in programming instruction yields curriculum and measurement strategies that give the teacher immediate feedback concerning student level and rate of progress. This information is valuable because it tells the teacher what he/she needs to do next: Change the program, if that is indicated; or move the child to more elementary or more complex skills. In general, this highly individualized strategy also leads to pupils' acquiring skills at a faster rate and with fewer errors. It is important to point out that what distinguishes programming as a process for severely handicapped pupils is not anything new about the strategy but, rather, the pupils' entering behavior (which occurs at earlier and earlier developmental levels) and the need to make the

FOCUS ON EXCEPTIONAL CHILDREN is published monthly except June, July, and August as a service to those concerned with mentally retarded and emotionally disturbed children. This journal is abstracted and indexed in *Exceptional Child Education Abstracts*, and is also available in microfilm from Xerox University Microfilms, Ann Arbor, Michigan. Subscription rates, \$9.50 per year. Copyright 1976, Love Publishing Company. All rights reserved. Reproduction in whole or part without written permission is prohibited. Printed in the United States of America. Second class postage is paid at Denver, Colorado.

Executive and Editorial Office  
6635 East Villanova Place  
Denver, Colorado 80222  
Telephone (303) 757-2579

### EDITORIAL BOARD

Edward L. Meyen  
University of Kansas

Glenn A. Vergason  
Georgia State University

Richard J. Whelan  
University of Kansas Medical Center

Sallie Carmachel Keeney  
Managing Editor

Stanley F. Love  
Publisher

individual instructional steps smaller (slicing the behavior into finer and finer pinpoints). An example of the latter can be found in the chapter "Developmental Pinpoints" prepared by Cohen, Gross, and Haring (1975).

Moving from the pinpoints—which can also be used to assess the developmental level of a severely handicapped child—to creating a curriculum for that child can open many alternatives to the teacher. However, whatever curriculum is developed and introduced must adhere to the basic principles noted above and must result in a quantified measure of change in pupil behavior. The kinds of data a teacher can collect to determine the child's progress include response rate data, trials to criterion, and other reliable measures. The basic progression in this: By using assessment data to determine what skills a child has and has not mastered and those developmentally appropriate skills he or she should master, the teacher can begin to prioritize instructional concerns. The teacher selects an appropriate target skill from the developmental sequence and programs instruction for that skill, slicing the instructional components as finely as is necessary for the child to master all of the target behavior's prerequisite skills. Tables 1 and 2 illustrate this process.

## EARLY INTERVENTION

We have emphasized the need to develop pinpoints and curriculum appropriate for the child from birth onward for two reasons. First, it is very likely that older handicapped children newly enrolled in educational programs may be functioning at this level in at least some areas of their development; usually there is tremendous "scatter" across developmental areas. But the more critical reason for this focus on infant skills is that *one further guideline in programming for severely handicapped pupils is to have access to them at the earliest possible time*. In order for this to occur, there must be the earliest possible recognition of infants or children at risk for severe handicapping conditions by professionals responsible for their healthy development.

In order to understand the importance of early intervention and issues to be raised later concerning early identification and the development of resources for severely handicapped persons, it will be useful to review here the history of the infant, with particular emphasis on the development of the central nervous system (CNS), the substrate for educational intervention.

## Infant Development

If we divide the nine month period from conception to birth into three trimesters, we can look at the major developmental events occurring during each period. During the first trimester, the form or *anatomy* is being established—that is, the shape and structures of all organs, including the brain. Insults of whatever nature (etiology) at this time may lead to abnormalities of anatomy—for instance, heart defects, limb defects, cleft lips, or abnormalities of the brain.

The second trimester can be characterized by the growth that occurs not only in numbers of cells but, particularly for the brain, the *type* of cells. Apparently in the developing human fetus, by the end of the second trimester the total number of neurons (nerve cells) that the person will ever have is established.

The final trimester is a period of further growth for all parts of the fetus including the CNS.

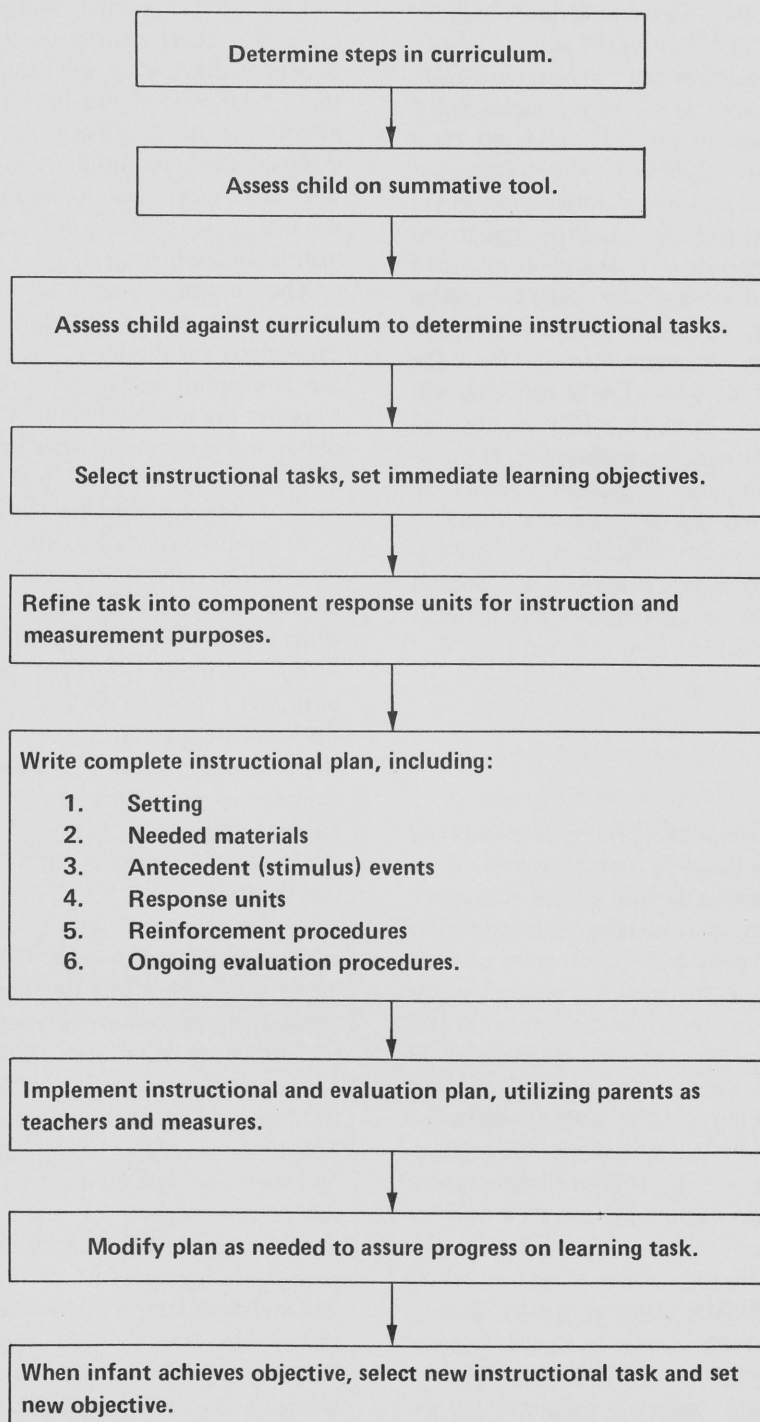
Beyond the prenatal period, some extremely interesting information relevant to the issue of programming for severely handicapped children is apparent—for instance, when and at what rate different tissues grow.

For the brain, the critical growth period begins before birth, but *it extends for at least two years*. Not all parts of the brain are growing at the same time, and there are some characteristics about this growth that are important to consider in planning early educational intervention. For instance, this is the period of most rapid growth of the cerebellum (the part of the brain associated with muscle coordination). The glial cells (which provide structural support and insulation to nerve fibers) are growing most rapidly during this time. Finally, and perhaps most important, during this two year period and beyond, the number of connections between the nerve cells themselves (dendrites) are being established (see Figure 1).

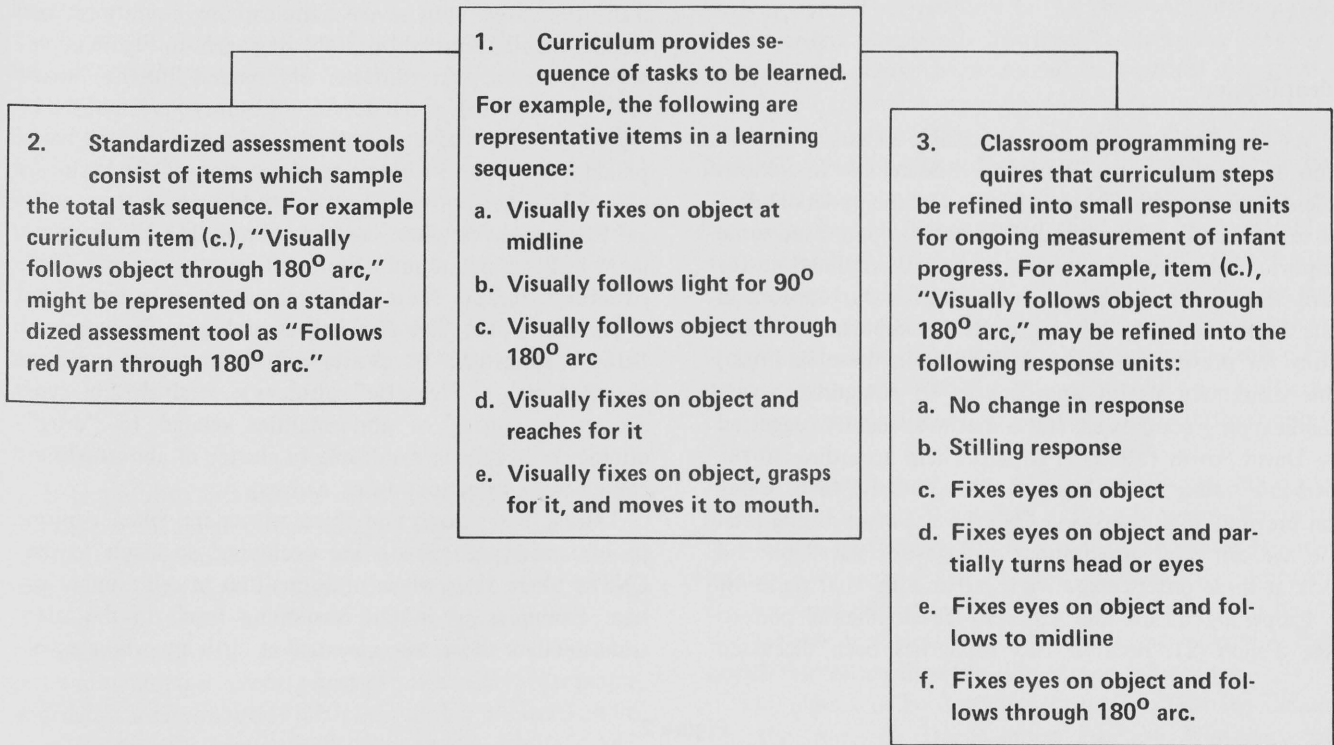
One must ask what impact the environment can have at this time, and the answer is very clear—a significant impact. This answer is supported by experiments with animals and by experience with humans. Examples of the latter include the known impacts of severe malnutrition or environmental deprivation on growth—in particular, brain growth—during the first years of life and on subsequent size and intelligence. We would like to refer readers to a remarkable discussion of brain development by John Dobbing (1975) who reports some recent research with animals and its potential implications for intervention.

For the infant at risk for severe handicapping conditions (particularly retardation), the environment and the condi-

Table 1  
STEPS IN THE INSTRUCTIONAL PROCESS



**Table 2**  
**RELATIONSHIP BETWEEN INFANT CURRICULUM STANDARDIZED ASSESSMENT,**  
**AND CLASSROOM PROGRAMMING**



**Figure 1**  
**CENTRAL NERVOUS SYSTEM DEVELOPMENT FROM CONCEPTION TO TWO YEARS**

| Conception     |  |               | Birth | Year 2            |   |
|----------------|--|---------------|-------|-------------------|---|
| Trimester 1    | Trimester 2                            | Trimester 3   |       | Year 1            |   |
| <b>Anatomy</b> | <b>Total neuron number established</b> | <b>Growth</b> |       | <b>Growth of:</b> |   |
|                |  |               |       |                   | <ul style="list-style-type: none"> <li><b>1. Cerebellum</b></li> <li><b>2. Glial cells - Support structures and myelin</b></li> <li><b>3. Dendrite proliferation</b></li> </ul> |

tions under which the child grows during the first two years of life are critical. The major implication for the comprehensive management program is clear: Educators and others must have early access to these children. (For a review of early intervention, see Hayden and Haring, 1975.)

### Identification

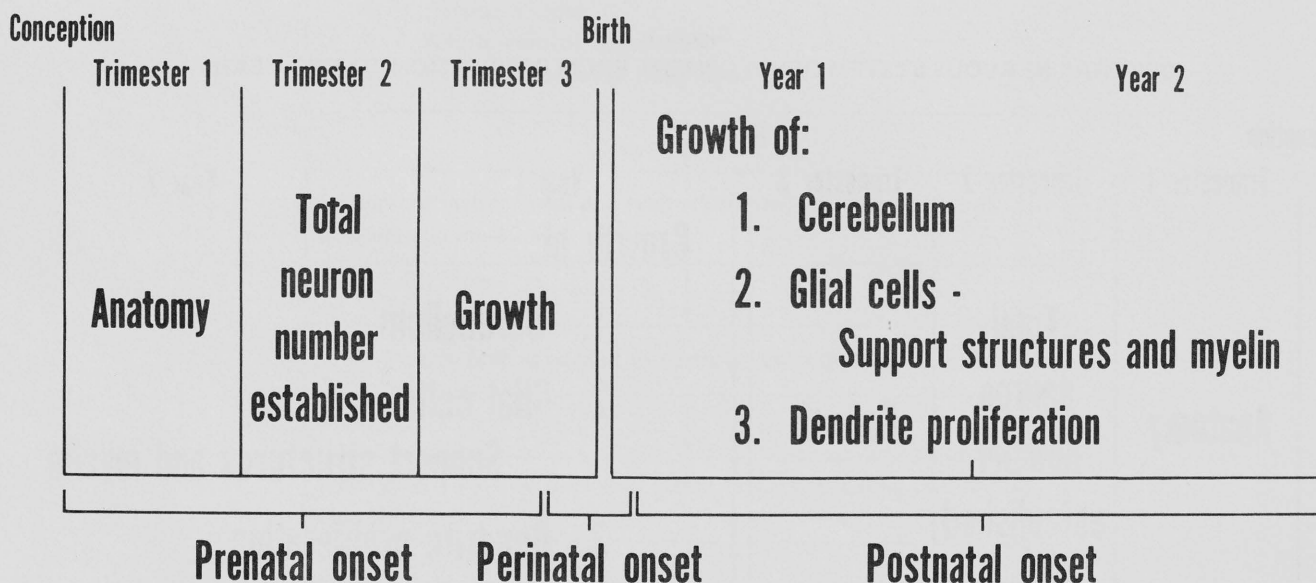
As we have noted, a critical variable in early intervention is identification. Work by researchers in various scientific fields which has contributed to the understanding of severe handicapping conditions has also permitted some important generalizations to be made with implications for early identification. (Since remediation is our concern in this discussion, we will not present the important implications for prevention that are inherent in these findings.) One extremely useful approach is to categorize severe handicapping conditions, and a method recently suggested by David Smith (1975) is to sort them according to *the probable timing of the injurious insult* to the CNS. Using the previous figure showing CNS development during fetal life, we can now superimpose a diagnostic paradigm and look at these onset categories together with what we know is happening during the different developmental periods (see Figure 2). Because this topic has been discussed

elsewhere at length (Smith, 1975; Beck, Adams, Chandler & Livingston, 1975), we will restrict this discussion to two categories only.

The first category—disorders with *prenatal* onset—accounts for almost one half of the number of children institutionalized with severe handicapping conditions, including mental retardation. Referring again to Figure 1, we see that in the first trimester of prenatal life the “anatomy” or structure of the developing embryo is established. Fully one-third of the children whose disorders have prenatal onset have a single malformation of the brain or CNS. The other two-thirds of the children in this category are those who may have not only abnormal CNS development but also major and minor malformations of non-CNS structures. Indeed, these malformations may be exhibited in *patterns* which have established etiologies—for instance, Down’s syndrome (a cluster of abnormalities with a chromosomal or “genetic” etiology); fetal alcohol syndrome (a cluster of abnormalities related to “drug” etiology); or rubella syndrome (a cluster of abnormalities caused by an infectious agent, a virus).

During the second and third trimesters, when neuron proliferation and growth are occurring, an insult to the CNS is likely to produce abnormalities in cell number or size. Examples of infants sustaining insult in the later trimesters are those who are small at birth but who are not

Figure 2  
TIMING OF INSULT TO THE CNS: WHAT AREAS OF DEVELOPMENT ARE AFFECTED



truly premature. These infants may have many medical complications in the newborn period, depending on the cause of the intrauterine growth failure. The subsequent development of these children is again quite variable; however, the majority will have measurable deficits in learning.

The second category of handicapping conditions, those with *perinatal onset*, comprises conditions arising from all of the complications that can occur in the birth process and the immediate newborn period, and that can adversely affect the CNS. During this critical transition period from intrauterine to extrauterine life, the CNS can be injured by interruption of the supply of oxygen, glucose, or other metabolites necessary for maintaining neuron viability. Infections or hemorrhage of the CNS may affect later development by injury produced through the above mechanisms or by direct injury to the nerve cells and supporting tissues of the brain.

### Summary

It is useful to think of the development of the CNS in devising educational interventions. Indeed, the period of development from birth to two years may be *the* most critical period for educational intervention. Early intervention for most children with severely handicapping conditions including mental retardation is a diagnostic process including a *careful physical examination* (for major and minor malformations related to timing of onset) and a *detailed history* (particularly for events which could adversely affect the CNS). This process could lead to designating as "educationally high risk" *by one month of age* as many as 50% of children who subsequently are recognized as severely handicapped, including those with mental retardation.

Two of the most important facts from the above discussion that must be basic considerations in devising educational intervention programs for severely handicapped children are these: *Most severely handicapped children can be identified early, and these children are likely to have multiple problems.* Besides needing educational programs, the children may also need to be referred to a facility such as a Birth Defects Clinic that is organized to manage the multiple medical problems of these children or a University Affiliated Facility, a center concerned with diagnosis, treatment, and basic research into the causes and prevention of mental retardation.

In the remainder of this paper, we will discuss some aspects of the educational intervention program—or classroom—for the severely handicapped pupil.

### SOME SPECIAL ASPECTS OF CLASSES FOR SEVERELY HANDICAPPED CHILDREN

Once a child has been identified, a resource must be available for the educational intervention strategy from birth onward. That resource is the classroom, with input from various disciplines involved in managing severely handicapped pupils; occupational or physical therapists, speech and communication disorders specialists, psychologists, nurses, and physicians are all part of the intervention team. Classes for severely handicapped children can now be divided into two general categories. The first is the class for the older severely handicapped child who has previously had minimal educational intervention, or none. Children in these classes usually attend school daily for five or six hours. The second category is the infant class, which serves infants and children under two. Professionals in this class may have contact with the infant or child for as little as one hour a week and only rarely for more than three hours a week.

The chronological age of the pupils is the least interesting or important aspect of these programs, for both may utilize curriculum which extends downwards to early infancy. We would like to look at these two types of classes, emphasizing the special characteristics of each and the *teacher* behaviors which are different in serving this population rather than the educational technology.

The classes to be described operate within the Center for the Severely Handicapped<sup>2</sup> at the University of Washington's Experimental Education Unit. In keeping with the principles of programming, ongoing review of pupil progress is a major component of the management strategy; by measuring progress continually, the staff are able to make necessary program changes instantly. In addition to daily, direct measurement, there is also periodic overall review of the group's progress in regular management team meetings and meeting between the team and parents.

#### Programs for Older Severely Handicapped Pupils

Two case studies of older pupils with multiple problems should help to identify the roles of the interdisciplinary classroom team, which includes not only a teacher but also the other specialists mentioned above.

2. The Center for the Severely Handicapped at the Experimental Education Unit is funded by the Bureau of Education for the Handicapped, U. S. Office of Education, under Contract No. 300-74-7989 Mod 1.

### Case Study #1: Jane

Jane (a pseudonym) entered this class when she was seven years old. Her history included birth abnormalities such as cleft lip and palate and abnormal findings in transillumination of the head (a diagnostic procedure). Subsequently, an abnormality in brain anatomy was diagnosed—holoporencephaly, an abnormality with prenatal onset, probably within the first trimester. Because Jane repeatedly showed high serum sodium (an indication of water depletion) when tested, physicians identified another problem—a defect in posterior pituitary function, which resulted in loss of water in her urine. Her contact with a birth defects clinic led to surgical repair of the cleft lip and palate as well as medical management of Jane's endocrine problem. Later, between her third and fourth birthdays, Jane's physicians believed that she had recovered her pituitary functions; medication for maintaining water balance was discontinued.

But Jane's history between ages four and seven was replete with hospitalizations (as many as four yearly) for dehydration. The physicians responsible for her care attributed this to Jane's taking insufficient fluids. Therefore, it was necessary to monitor her fluid intake. After Jane was enrolled in the class for severely handicapped children, it became obvious that the staff could do the monitoring; and that activity became a part of her program management goals within the classroom.

When she joined the class, Jane's performance was at less than the one year level; she had no self-feeding skills, was not toilet trained, and emitted many bizarre behaviors including self-stimulation. The following immediate classroom goals were set for Jane:

1. Increase her fluid intake to meet her needs (minimum of 1000cc, or a litre, per day); and monitor her urine concentration (specific gravity).
2. Decrease Jane's self-stimulating behaviors.
3. Begin curriculum to develop self-feeding, toileting, and other self-help behaviors.
4. Increase Jane's communication skills.
5. Institute a physical therapy program for improving Jane's muscle tone and function.

The classroom staff noted that the surgical repair of Jane's cleft lip and palate was far from functional—Jane

had difficulty in swallowing, with regurgitation into the nose; and her nasal passages were so narrow that she had obstruction with the slightest upper respiratory infection. Therefore, the staff added to the list of goals for Jane a referral for evaluation of the surgical repair. Further, Jane needed vigorous decongesting with any upper respiratory infection as an interim solution until surgical consultations about repair of her cleft lip and palate could be obtained.

The data collected by Jane's teacher are grouped in Figure 3. The staff observed the following: The weekly blood test performed in the classroom showed that, even with adequate water intake, Jane's serum sodium did not fall to normal levels. However, during this 3 month period Jane did not have to be hospitalized.

At this point, elective hospitalization was scheduled for reevaluation of Jane's pituitary-renal axis; indeed, Jane was found to have partial function of this feedback system. The specific recommendation of the endocrinologist was to try different oral medications to maximize the effect of her partially active feedback system.

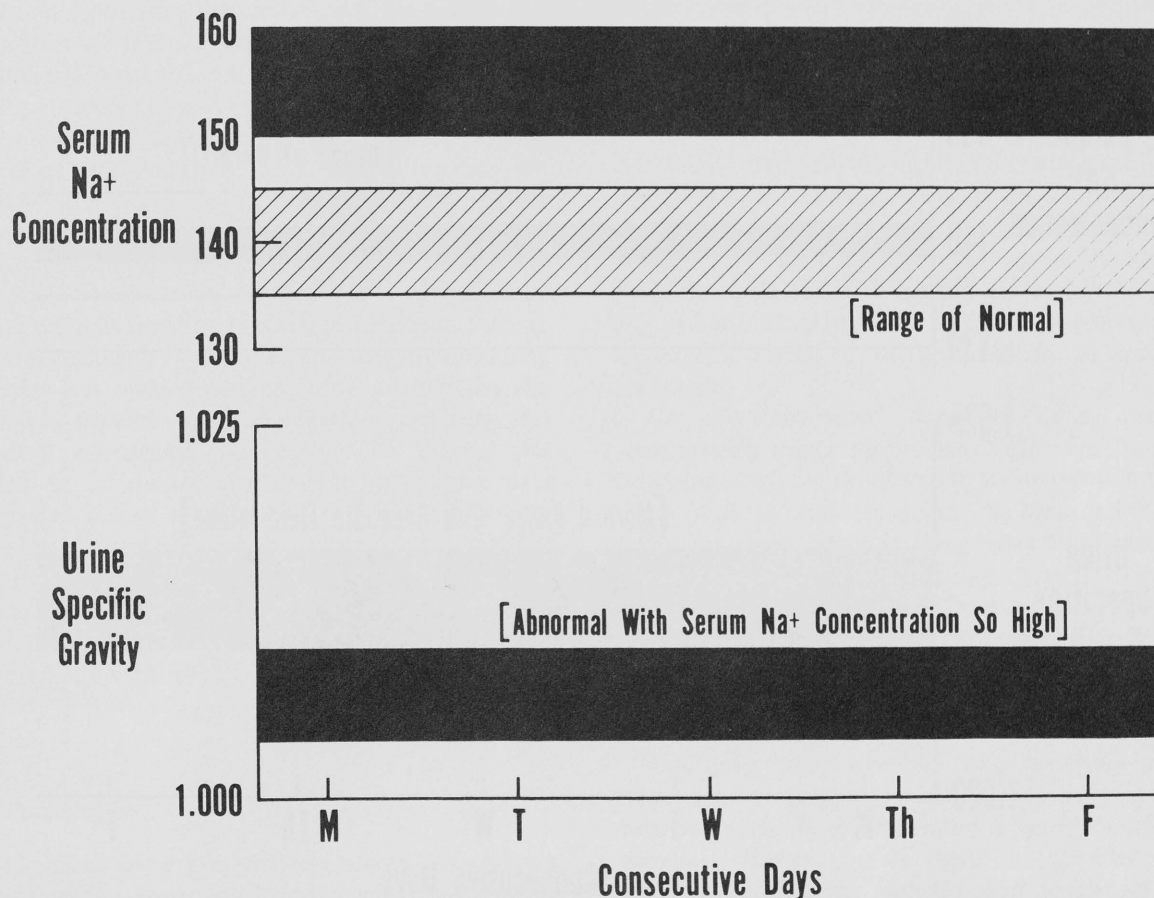
When Jane returned to the classroom, she was placed on oral medication. The teacher in the class monitored Jane's fluid intake and measured the specific gravity of her urine during the toileting program, using a test he had been trained to perform. Further, the physician continued to draw a blood sample once each week in order to evaluate Jane's progress under this program. The subsequent data collected by the teacher are shown in Figure 4.

Programs for other, more traditional educational interventions are continuing for Jane. She has not required hospitalization (other than the elective admission mentioned above) since she entered the classroom. The type, dosage, and timing of oral therapy for her endocrine problem can be closely followed in the classroom; these observations have been crucial in managing Jane's medical problem.

*Comment.* Jane's case illustrates quite clearly how the classroom management team can serve extremely useful functions, in addition to providing traditional educational intervention, by their observations, data collection, and monitoring of progress. It is fair to say that without the input of those who observed Jane in the natural environment of the classroom, her condition would have led to repeated bouts of dehydration and expensive hospitalizations. It is worth mentioning that, had Jane not had multiple problems, her partial pituitary-renal impairment would have been diagnosed much earlier. The precise measurement of the important variables was possible only in the classroom environment.



Figure 3  
 JANE'S SERUM SODIUM AND URINE SPECIFIC GRAVITY WITH OPTIMUM FLUID INTAKE  
 IN THE CLASSROOM: FINDINGS BEFORE MEDICAL TREATMENT



Normal range is indicated by shaded block; Jane's abnormal findings are indicated by black block.

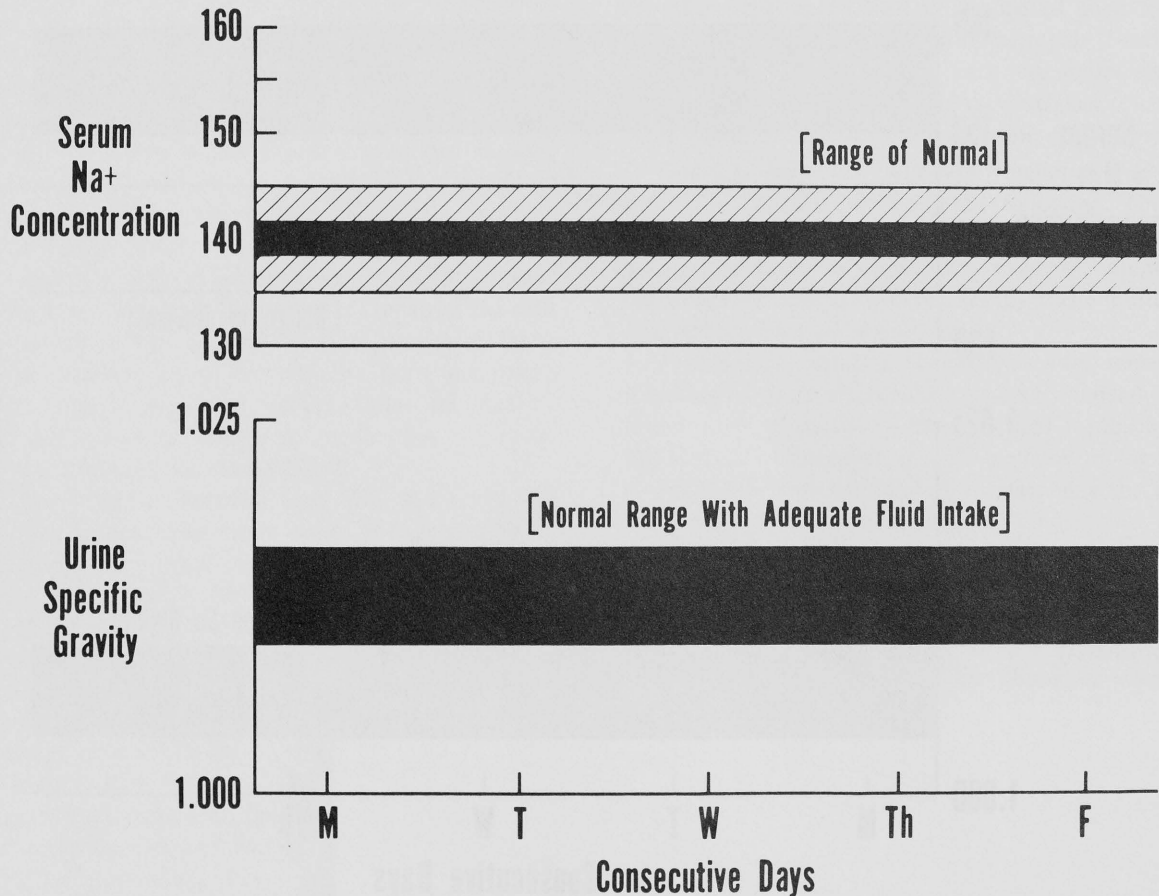
#### Case Study #2: Jackie

Other problems managed in the classroom not usually considered within the "jurisdiction" of educators but increasingly within their province as they work with severely handicapped children, include monitoring of seizure control medications. Perhaps this problem can emphasize some of the difficulties faced by the educational program managers of severely handicapped pupils. Traditionally, control of seizures has been the management concern of neurologists, not of educators. Unfortunately, most seizure medications have side effects which may interfere with learning; and in many instances, seizure control has been possible only with the use of more than one drug, each compounding the number and type of side

effects that can interfere with learning. Only through the classroom for severely handicapped children have we gained the precision which allows for the close monitoring of side effects *and* learning.

Jackie (a pseudonym) is another student in our class for severely handicapped pupils, and her case illustrates some of the problems involved in seizure management. She was born with multiple major and minor abnormalities and was diagnosed as having a very rare chromosomal anomaly (with prenatal onset). Jackie did not begin to have seizures until late in her first year of life. She was hospitalized for neurological evaluation, and drug therapy was instituted in order to control the seizures. Since "medical" intervention tends to be periodic, Jackie was not reevaluated for approximately one year, except for adjustments of her

Figure 4  
JANE'S SERUM SODIUM AND URINE SPECIFIC GRAVITY DURING MEDICATION TRIALS AND MONITORING IN THE CLASSROOM



Jane's findings, indicated in black blocks, are now well within the normal range.

medication dosages as necessary to accommodate her growth. Jackie's mother, however, made some interesting observations during that year: Although Jackie clearly was not normal, she had been an active child and *had* been learning before her seizures; the side effects of seizure control led to seemingly complete cessation of this development. Jackie's mother was quite daring; she decided to stop medication. In her view, the rare occurrence of a seizure was not nearly so alarming as was Jackie's impeded developmental progress. Unfortunately, this decision led to severe chastisement of Jackie's mother by the child's physician. One cannot fault either party; the issue was really one of different priorities. The physician was primarily concerned with controlling seizures and was not so alarmed about inhibiting developmental progress.

Fortunately, Jackie was enrolled in the class for severely handicapped children at this time. The staff reinstated seizure control medication, but within an environment where the possibilities for learning *and* for controlling seizures could be optimized. The staff had to help Jackie's mother overcome her guilt and anger about what had previously occurred, support her appreciation of the need for promoting developmental progress, and reestablish contact with those responsible for Jackie's seizure control. This time, however Jackie's physician had the classroom data that he needed to optimize both seizure control and developmental progress.

*Comment.* We spoke earlier about the need for comprehensive management of severely handicapped pupils. We also mentioned that educators are in fact the only

professionals who are required by law to concern themselves with this issue. It is fair to say that educators will have to lead the way in *classroom-based* comprehensive management by eliciting the support, interest, and involvement of other specialists. Jackie's case illustrates one of the most effective ways this can be done—by collecting and supplying classroom data to other professionals. In Jackie's case, the physician caring for her was first of all quite surprised and pleased that there was a resource—the classroom—available for Jackie where she would be given systematic opportunities for learning. This alleviated some of the understandable frustration he shares with many professionals who fear that they will not be able to make adequate referrals for their handicapped patients. Second, when he was shown performance data—data demonstrating that Jackie was making developmental progress—he was impressed by the kinds of learning that were occurring. But the critical information that elicited his support was presented in differential performance data; these data demonstrated clearly that Jackie's performance was impeded when she was on higher drug dosages and was either asleep or drowsy much of the time, and that she *could* make quite acceptable progress when the dosage was lowered. The physician's cooperation with the classroom management team has been an important outcome of data sharing.

### Infant Programs

Development of a program for infants and children younger than two years, based on the early recognition of severely handicapping conditions or the risk of significant developmental delay, has changed the traditional concept of a classroom. We would like to discuss some of the unique features of the early intervention program.

*Diagnosis and Intervention.* From our earlier discussion, we know that establishing that an infant is at high risk for developmental delay should be possible from a review of the medical history and a detailed physical examination. Immediate referral of the child to a program is justified if the staff in the program carefully establish developmental pinpoints, sequence curriculum, and generate reliable performance data. What happens then is that the fine-focus "diagnosis" of developmental delay depends on infant or child performance *over time* in a program that provides appropriate intervention and a longitudinal commitment to the child and his/her family *within the community*. The classroom also provides a base for focusing the input of the

interdisciplinary team whose members may be physically remote from the program. This input includes the periodic administration of developmental assessment tools (for instance, the Bayley) by appropriately trained psychologists. These assessment data can be utilized by the staff not only in curriculum development but also for monitoring the effectiveness of intervention tactics. Periodic assessment also provides information that can be utilized in establishing frequency of classroom contact and "graduation" from the program. Finally, these data also provide a means for monitoring continued development after the infant leaves the program. However, to emphasize the point we made earlier: Diagnosis of developmental delay by the administration of a "test" is *not* a prerequisite for an infant's referral to, or enrollment in, an intervention classroom.

*Use of "Respondent" Behaviors.* Young infants and some severely handicapped older children emit respondent behaviors which can be utilized in an intervention program. Some of these behaviors include the Moro reflex, rooting reflex, tonic neck reflex, stepping reflex, trunk incurvation, and placing reflex. When eliciting these reflexes, one is impressed by the variation from infant to infant in strength, duration, and the composite impression of "quality" of response. Some of these variables may depend on the state of *food deprivation*, other variables may relate to CNS function.

One may argue whether these behaviors are truly respondent or operant (for instance, the rooting reflex or behavior might be operant after a tactile discrimination stimulus). However, it is useful to consider these as respondents since the reflexes tend to change in time (components drop out of the response or the response disappears) as the infant matures. This may reflect the increasing control of higher brain centers (whose output tends to be inhibitory) with maturation and is also consistent with the finding that these "reflexes" reemerge in brain-injured adults—that is, adults who sustain sudden removal of input from the "higher" brain centers.

As an intervention strategy for an infant with asymmetry of response, incomplete response, or decreased muscle tone, the elicitation of respondents may help to overcome deficits in the response as well as to improve symmetry of response and, therefore, may be part of the intervention goals.

To reiterate, all infants and some older severely handicapped children have a class of behaviors, respondents, not found in normal older children which may be utilized in the infant curriculum; and the state of food satiation may

be an important variable in the timing of the classroom intervention program.

*Intervention vs. Maturation.* The infant program must be able to separate the effect of the intervention on behavioral change from that related to maturation of the CNS occurring during the first two years of life. This is important not only to document effectiveness of different intervention programs but also to allow economic use of teacher/parent time in program administration. For example, it may be inefficient to begin sequences designed to develop visual discrimination for color or shape before the time when the infant's visual acuity is appropriate for the task. Conversely, it might be most effective to correct *all* children's "normal" deficit in visual acuity early in the first year and to begin these sequences early (although the prospect of a class full of infants wearing glasses gives one pause). Likewise, since the cerebellum is undergoing the most rapid growth of any part of the brain following birth managers must carefully consider the timing and type of motor intervention sequences.

*Parent Involvement.* The infant classroom experience not only provides ongoing assessment and sequencing for the infant, but includes the development of a parent curriculum. This curriculum begins with the parent's learning to run the instructional program and includes the goal of training the parent to use differential responding and recording of data in simple contingency management. Where reflexes and physical therapy exercises are involved, the parent can be taught instructional skills. As the parent's skills increase, new tactics are introduced. This aspect of the infant program may indeed be the most important. At present, the infant's time in the classroom may be limited to one hour per week. Therefore, it is imperative that the parent be able to run the program at home. When we look at the prognostic implications of some educational intervention, we will see that the parent curriculum may play another highly significant role.

## REPLICATION OF THE BASIC INTERVENTION MODEL

The topics and examples we have discussed illustrate the diversity of problems and issues which program managers in classes for severely handicapped pupils may be expected to handle. The measurement of behavior and collection of data (whether behavioral or physiological data) reflect the tenets of "precision teaching," a systematic approach to instruction that has special relevance to the multiple problems of the severely handicapped.

The examples, however, were drawn from classes within an interdisciplinary center, one whose resources are sophisticated and where highly trained specialists bring their expertise to the management of severely handicapped pupils. It is certainly fair to ask whether the service delivery model operating in such a center is relevant to needs and resources in the "real world" outside the center. One of the guidelines in developing a program for severely handicapped pupils is that, if the model is to be at all useful to practitioners, it must "travel" well and be adaptable to many different environments. One of us (Dr. Beck) has recently had the opportunity to observe, and participate in, service delivery in a very remote community, American Samoa. We would like to discuss briefly the experience of the American Samoan government in developing programs for severely handicapped children as a model of planning and utilization of *available local resources*. Table 3 encapsulates the time and activities involved in developing this model.

The ten-day assessment period was the culmination of work carried on during the preceding two years, initiated by Dennis McRae, Director of Special Education in American Samoa. During that time, Public Health Nurses known in the villages were able to identify approximately 25 children with severe handicapping conditions by traveling to the villages and conducting a house-to-house (fali-to-fali) survey. Also during this time Samoan teachers were sent for special training to the University of Washington, equipment was ordered for the classroom, and details of transporting these children to the classroom were finalized.

On the first day of school in September, 1975, the assessment team—a special educator and a pediatrician—arrived. The children were brought to the classroom in small groups, and with the teachers present the children were examined physically and educationally. The pediatrician subsequently reviewed the medical histories, including hospital records. A classroom record was begun (see Table 3) for each child. The director of special education and the assessment team then met with personnel of the Lyndon Baines Johnson Tropical Medical Center and arranged for physical therapists, public health nurses, and physicians to be involved in the classroom for severely handicapped pupils. This was accomplished with cooperative efforts on the part of the LBJ hospital staff and facilitated by the generation of precise educational and medical goals for each child in the classroom. Indeed, management of some of the children's medical problems became possible for the first time because of the children's

**Table 3**  
**MODEL UTILIZING AVAILABLE LOCAL RESOURCES**

| TIME   | MEDIC  |
|--|--|
| 1 - 3 years (variable)                       | <b>ADMINISTRATION:</b><br>Formulating plan<br>Writing funding proposal<br>Acquiring space and personnel with appropriate training  |
| 6 months - 1 year<br>(concurrent with above) | <b>FIELD:</b><br>Public Health Nurse canvass of catchment area for severely handicapped children<br><br><b>ADMINISTRATION:</b><br>Finalize needs in funding proposals: <ol style="list-style-type: none"> <li>1. Personnel—teachers: number and training type</li> <li>2. Space</li> <li>3. Equipment, including transportation</li> </ol>   |
| 6 months (approximately)                     | <b>TEACHER TRAINING</b>  |
| 10 days                                      | <b>ASSESSMENT TEAM AND TEACHER ACTIVITIES:</b> <ol style="list-style-type: none"> <li>1. Establish student charts that include the following:               <ul style="list-style-type: none"> <li>—medical history</li> <li>—physical examination</li> <li>—goals: educational and medical</li> </ul> </li> <li>2. Arrange for input to the classroom from speech and communication disorders specialist, physical therapist, and medical resource personnel</li> </ol> |

daily attendance in a highly structured, supervised program—that is, the classroom.

The establishment of a “high risk” register to be reviewed jointly by the medical director of the Maternal and Infant Care Project and the director of special education will lead to earlier identification of children at risk and intervention through the ongoing development of the American Samoan program for severely handicapped persons.

#### CONCLUDING STATEMENT

Implementing *effective* comprehensive programs for severely handicapped persons, including infants and children under two years of age, with establishment of a community-based educational resource has been made possible by the precise application of an educational

technology. Effective community-based programs can provide an alternative to institutionalization for many severely handicapped children by optimizing their opportunity to achieve semi-independence within the community. However, without an extended family system (as is found in American Samoa, for instance), we will never be able to close all institutions because there are times when some parents are no longer willing or able to provide care for their severely handicapped children. What *can* be accomplished through the community-based program is to optimize the educational intervention for such children, increase the age at which institutionalization becomes necessary, and plan continued educational interventions within institutions. While the above accomplishments can be defended on humanitarian grounds alone, they may well be economical too given average costs of institutional care (approximately \$1,400.00 per month).

Inevitably, at many points in developing programs for severely handicapped children, one can expect to be faced with queries—even from well-meaning professionals—about the worth of such a program for a particular child who seems capable of only “vegetative” function. Physicians, for instance, have been forced to define “end-points” in many aspects of service, as the current case of Karen Quinlan so poignantly makes clear. For example, one uses 26 weeks gestation to determine the viability of a fetus and the time when it is no longer possible to electively terminate pregnancy, a flat EEG for 24 hours to determine “brain death.” Will we, as educators, be forced to define a “null point” or “zero rate” for determining when to end educational interventions? Fortunately, we think not. This is not only because of the precision and demonstrated effectiveness of the teaching methodology available to us, but also because of the parent curriculum we discussed earlier. To our way of thinking, it is meaningless to talk about “comprehensive management” unless a child’s family are active participants. It is not only feasible but eminently desirable that parents (or surrogate parents) be trained to participate in their children’s educational intervention. We believe, therefore, that no matter how severe the damage to an infant or child—damage that interferes with learning—there is still a program that parents can be trained to manage, with ongoing assistance from all of the resources mentioned earlier in this paper. Such a program involves helping the child to learn what he or she *can* learn, maintaining the child with dignity, and performing those “nursing” functions that can prevent complications of the child’s condition or morbidity. There is no excuse for ending such intervention.

## REFERENCES

- Beck, G. R., Adams, G., Chandler, L., & Livingston, S. S. The need for adjunctive services in management of severely and profoundly handicapped individuals: A view from primary care. In N. G. Haring & L. Brown (Eds.), *Teaching the severely handicapped: A yearly publication of the American Association for the Education of the Severely/Profoundly Handicapped* (Vol. 1). New York: Grune & Stratton, 1975, in press.
- Cohen, M. A., Gross, P., & Haring, N. G. Developmental pinpoints. In N. G. Haring & L. Brown (Eds.), *Teaching the severely handicapped: A yearly publication of the American Association for the Education of the Severely/Profoundly Handicapped* (Vol. 1). New York: Grune & Stratton, 1975, in press.
- Dobbing, J. Human brain development and its vulnerability. In *Biologic and clinical aspects of brain development*, Proceedings of the Mead Johnson Symposium on Perinatal and Developmental Medicine No. 6. Evansville, Indiana: Mead Johnson & Company, 1975.
- Hayden, A. H., & Haring, N. G. Programs for Down’s syndrome children at the University of Washington. In T. D. Tjossem (Ed.), *Intervention strategies for risk infants and young children*. Baltimore, Maryland: University Park Press, 1975, in press.
- Smith, D. W. Rational diagnostic evaluation of the child with mental deficiency. *American Journal of Diseases of Children*, 1975, in press.

---

We would like to thank the following people for their contributions to this paper: Ron Gawith, assistance with graphics; Barbara Learmonth, Lois Musgrave and Cheryl Mathisen, typing; and Connie Pious and Gael McGinnes, editorial assistance.

## LETTER FROM A READER

*Focus on Exceptional Children* does not routinely print letters received from readers. However, on occasion a response is received which places in perspective a major problem addressed by an article in *Focus on Exceptional Children*. The letter from Jeffry White is such a letter. The headlines of the newspaper articles have been included for illustrative purposes only. Correspondence on the case should be directed to Mr. White.

Love Publishing Company  
Editorial Office  
6635 East Villanova Place  
Denver, Colorado 80222

Dear Sirs:

The October, 1975, edition of *Focus on Exceptional Children*, titled “Parent Training: Bringing It All Back Home,” was one of the best written articles on parent involvement that I have had the pleasure to read. Having been involved with a group of dedicated parents this year who are now in court trying to obtain judicial relief from an elementary school district, I would like to share my views on the subject in the form of an editorial.

## “WHO SPEAKS FOR THE CHILDREN”

Can twelve parents concerned for their educationally handicapped children beat the system? In the Santa Clarita

Valley, just ten miles north of Los Angeles, a group of parents are fighting against tremendous odds to accomplish what everyone often believes to be impossible. They dare to interfere with the local school district's decision to move their handicapped children for the fourth time in two years.

Charging discrimination, lack of concern, and armed with psychological advice that their children must have the security of a stable school environment, the parents have attempted to voice their dissatisfaction with the local school officials. The local school system, however, too often has not listened to the citizens that they supposedly represent. The educational system too frequently has considered itself untouchable and has warded off complaints and warnings with self-assured arrogance. The normal channels for parents of children that have special learning needs have not been productive. In recent years many parents, including the parents that I am working with, have been forced to turn to the courts out of desperation.

What started as the emotional pleading of individual parents begging for the individual child's welfare to the local school district has become a concerted effort, by these parents, in demanding their rights as American citizens.

The fact that Special Education students have obviously been singled out as the children to move first and most often indicates lack of sincere concern for the educational and emotional needs of these already handicapped children. It is fortunate that the parents of these children have seen fit to protest this callousness and inefficiency. It is a shame that they were forced into this position.

Sincerely,

s/Jeffry L. White

Jeffry L. White  
Special Education Teacher  
Sulphur Springs Union School District

(Home address)  
20120 Fairweather Street  
Saugus, California  
(805) 251-2399

P.S. I am enclosing a stack of newspaper articles [headlines listed below] so that you may acquaint yourself with the background of our present court challenge. At the

present time the case is being investigated by the United States Attorney General, Edward Levi, in Washington, D.C.

**Handicapped Class / PARENTS UNHAPPY WITH MOVE**

**Parents May Sue / HANDICAPPED MUST CHANGE SCHOOLS**

**HANDICAPPED CLASS MOVE WINS APPROVAL OF BOARD**

**Handicapped Class / PARENTS' INJUNCTION PREVENTS MOVE**

**JUDGE HALTS RELOCATION OF CLASS FOR HANDICAPPED / Restraining Order Issued After Parents Complain of Repeated Moves in Sulphur Springs District**

**SCHOOLROOM CASE TO BE HEARD**

**Letter to Editor: HANDICAPPED**

**CLASS MOVE NOT YET DECIDED**

**COURT OK'S TRANSFER OF HANDICAPPED PUPILS**

**Parents Appeal / HANDICAPPED CLASS WILL MOVE TO COX**

**PARENTS ASK CLOWES' RESIGNATION**

*FOCUS ON EXCEPTIONAL CHILDREN* back issues are available. Single copy of a back issue is \$1.50, while ten or more copies of the same issue are 50¢ each.

*FOCUS ON EXCEPTIONAL CHILDREN* newsletter binder is now available for \$3.50.

# CLASSROOM FORUM

*Edited by Alwyn H. Holloway, Center Coordinator  
South DeKalb Children's Center*

**As a Special Help resource teacher, I have found that many students are unaware of the effect their behavior has on their relationships with others. This "blindspot" frequently results in unpopularity, ridicule, and general poor interpersonal relationships. Can you suggest a technique which will assist me in creating for these students a greater awareness of the impact their behavior has on others?**

This question reflects a situation all too common in children and adults alike. The inability to fully comprehend and appreciate the effects one's behavior has on others is frequently the cause of no friendships—or broken friendships. Frequently, teachers are confronted by students asking, "Why doesn't anybody like me?" and "Why don't I have any friends?" It soon becomes apparent that mere verbal counseling and suggestions are inadequate in assisting students with such problems. The approach cannot be solely cognitive. Rather, it has to be experiential and on a feeling level.

One technique in utilizing such an experiential approach to learning is the use of an activity called "Guess Your Label." In preparation for the activity, make a list of specific behaviors and feelings needing emphasis. Then

gather a supply of adhesive-backed labels, and write one of the behaviors or feelings on each label. Some of the following behaviors might be utilized: "Ignore me" "Be nice to me" "tease me" "I'm new here—make me feel accepted" As specific behavioral concerns are noted, included these according to needs of the children.

Begin the activity by asking for six or eight volunteers (the number can certainly vary) who would be willing to wear labels on their foreheads. Whenever possible, it is helpful to match a student with a label indicative of his behavior needing some modification. The person wearing the label is NOT told which label he is wearing. All persons not wearing labels then leave their seats and interact with the labeled students. It is important for the teacher, as well as the students, to observe facial expressions and reactions during the interaction of nonlabeled and labeled persons. Following an ample amount of time for the interactions, everyone returns to his seat. Each person wearing a label is given the opportunity to guess the behavior written on his label, based on the way the other students have interacted with him. During the follow-up discussion, the labeled students are encouraged to express how they felt about the behaviors and attitudes of other classmates toward them. Ask them to relate which behaviors of other class members helped them to guess their labels. Then ask them if they can recall an instance when they have treated someone in a like manner. How do they think that person may have felt at that time?

This activity enables students to reflect upon the effects their behaviors have on the attitudes of others toward them. It can be a very meaningful experience for many students and can be utilized with elementary age children as well as with adolescents. The activity can be adapted in many ways to specific needs of children and has many exciting possibilities. Good Luck!

---

We wish to thank Glenda Broder, Resource Teacher, Dekalb County Schools, Georgia, for writing this column.