THE RE-ENTRY OF TRAUMATICALLY BRAIN INJURED STUDENTS INTO RURAL SCHOOL SYSTEMS

Special education services across the country have gone through some radical changes since Public Law 94-142 was implemented in 1975 (Helge, 1980). This federal law mandated that schools provide all handicapped students with a fee and appropriate public education. PL94-142 also delineated that the services be provided in the" Least Restrictive Environment". This stipulated that "...to the maximum extent possible, handicapped students must be educated in the company of their non-handicapped peers" (Carter & Savage, 1985).

This law was intended for ALL school systems across the country and for ALL handicapped students, regardless of the degree or nature of their handicapping condition. However, school districts in many rural communities have experienced problems when striving to implement the services mandated in PL94-142 (Helge, 1980, 1984a, 1984b). "A district is considered rural when the number of inhabitants is fewer than 150 per square mile or when located in counties with 60% or more of the populations living in communities no larger than 5,000 inhabitants" (Helge, 19845b).

Additionally, there have been students with certain handicapping conditions who, despite guarantees with the law, have experienced problems receiving appropriate educational services. One such group of students are children with traumatic brain injury (TBI). Traumatic brain injury occurs when an individual incurs "...a serious blow or jar to the brain which may unfortunately cause disruption to his/her cognitive, social, and physical well-being" (Pollack & Savage, 1985). There are specific characteristics of persons with traumatic brain injury (TBI) that differ significantly from any other disability category.

Educating any student with special needs is a challenge for any school system. Educating a traumatically brain injured student presents a unique set of challenges. The unique needs of a TBI student combined with the weakness that a rural school systems special education program may exhibit, compound the obstacles that a TBI student may encounter in his/her pursuit of education.

RURAL SPECIAL EDUCATION

"Two thirds (67%) of all school districts are classified as either rural, remote or isolated because of sparse population or geographic location" (Helge, 1980). Enrolled in these school districts are more than 15 million children ages 5-17. The estimated number of handicapped students in these schools has ranged as high as 1.8 million ([Education of the Handicapped, 1979]; Helge, 1980). There are an infinite number of types of rural communities. The individual community structure is determined by the inter-relationships of a number of variables. The specific combination of variables make up the individual community structure, which then, in turn, directly affects school programming.

RURAL VS. URBAN COMMUNITIES

Although there are numerous types of rural communities, there are enough similarities in the overall functioning of all rural schools that they may be considered a unit in comparison to urban schools.

Urban schools tend to employ staff with more advanced levels of education and experience than do rural areas. Since urban schools have a larger student body, they are likely to have more students of various disability categories. Urban schools typically have the resources to run multiple special education programs. They are, therefore, less likely to be faced with having problems common to rural districts such as having to develop programs for only one or two children, or to clump children of differing needs together because of space or staffing shortages (Helge, 1980, 1984b).

The issue of personnel turnover is different in rural areas than in urban. Rural areas typically have an extremely high turnover rate with specialized personnel such as Occupational Therapists, Physical Therapists, Speech Pathologists, and Special Education Teachers serving low incidence populations. In urban areas the turnover in staff is more commonly seen at the administration or management level (Helge, 1980, 1984b). Communication systems vary between rural and urban communities. In rural areas there is predominantly person to person communication, whereas in urban areas the systems tend to be more formal, frequently using written memos.

Due to the variety of low incidence disabilities in one rural school, rural special educators tend to be generalists. A generalist can perform a variety of tasks; teach a variety of ages and handicapping conditions and subjects. It would not be cost effective for rural schools to hire specialists in any one area with only one student within that category. Urban schools on the other hand, tend to need specialists. In urban areas there are usually enough students within a disability category or age group to warrant clustering the students and hiring a specialist (Helge, 1984b).

RURAL COMMUNITY STRUCTURE

Rural areas may be located on islands, mountains, sea coasts, as well as in deserts or hill country. Within these topographical locations a rural district is faced with particular barriers. Certain locations may be accessible only during select seasons due to weather restrictions. Communities can range from sparsely populated farm areas, where homes are spread apart by large expanses of farm land to factory/mill towns, where all the homes are clustered close to the work place.

In addition to topography and population density, there are a number of other community and school district variables, each of which has individual ramifications for service delivery. Among these variables are district administrative structure; representation of ethnic and religious groups; socio economic status; prevalence of

various disabilities; community services available; history of community attitudes towards individuals with disabilities, and history of special education services (Helge, 1984b).

RURAL SERVICE DELIVERY MODELS

There are numerous service delivery models in rural school systems. The most common are collaboratives (cooperatives) and resource rooms. A collaborative is a centrally based facility which provides special education services to a group of contracting districts. A student may travel to the facility for service, or special education personnel may travel to the student's local school. The term for this "travelling teacher" is itinerant. Where services are delivered will depend on a variety of factors such as particular needs, distance and accessibility.

If a rural district has sufficient need it may develop a resource program. Variations of the resource model have developed. Weiderholt, Hammel and Brown (1978) have described the various models. The categorical resource program is most like the traditional self-contained class. This model enrols students who have been diagnosed as having a particular handicap. One categorical program may serve all learning disabled students, while another may serve all educable retarded students; however, they will not be mixed in one class. The cross-categorical model also serves students who have been classified as handicapped. In this model one room may serve students from two or more disability categories.

The children in a non-categorical resource model have mild to moderate learning problems, and may or may not have been diagnosed as handicapped.

SERVICE CHANGES SINCE 1975

Before the passage of PL94-142, many rural areas were not servicing their handicapped population. The National Rural Research Project conducted a study which reported that the increase in the number and type of handicapped students identified and served since the passage of PL94-142 averaged at 92% (Helge, 1980). Although there has been a significant increase, percentages have not reached 100% and problems remain with the quantity and quality of services offered (Helge, 1984b).

PROBLEMS IMPLEMENTING PL94-142

One of the primary problems in implementing PL94-142 is the difficulty that rural areas experience in recruiting and retaining qualified staff. The conditions under which rural special educators work are stressful. Teachers are generally located in isolated areas without any support system from other special educators. This restricts professional growth and increases burn out rate. Itinerant personnel are frequently required to travel extensive distances daily, and spend the allotted amount of time in providing direct student service at each school. This makes it extremely difficult for them to develop relationships with any school staff members.

The majority of teacher training programs do not include coursework which addresses issues specific to rural environments (Helge, 1984b). Therefore, the special educator who accepts a position in a rural community frequently does not have proper understanding of the environment in which he/she will be working. The policy and decision making structures differ from non-rural areas, as do the communication structures. Not only are special educators faced with social, cultural, and professional isolation, but they are rarely accepted as members of the community. This stress is coupled with the fact that the special educator is expected to meet a variety of student needs, most likely with minimal resources.

Resistance to change is a common problem in rural areas and may be manifested in a variety of ways. Regular educators may be hesitant to mainstream handicapped children into their classrooms. This hesitation maybe displayed through simple complaints, demands to have the child removed, or refusal to make any adaptations in lessons or behavioural programs.

Funding inadequacies are another problem reported for rural areas in implementing PL94-142. Specific areas mentioned as problematic include: hiring support staff particularly for low incidence and severely handicapped populations; transportation; facility renovation; out of school placements; and preschool and vocational programs. Although monies may be available which would help alleviate the funding inadequacies, many rural school administrators do not know how to acquire the funds. Training in grant writing might help rectify this particular problem (Helge, 1980).

When a rural district does choose to implement a resource program, it encounters problems.

Harris and Mahar (1975) identified four typical problems: lack of organizational readiness; system shock; competency crisis; and interpersonal roadblocks. The lack of organizational readiness is generally evidenced by the paucity of complimentary services available. This in turn sets the expectation that the resource teacher will take care of all needs.

The concept of system shock arises when a school is required to make various adjustments for the incorporation of the new program. Most likely the entire school will assume some level of involvement. Space in the building as well as the size of the student body will partially determine the level of involvement. Scheduling may also strain the system. For example, if a child is being serviced for reading, the classroom teacher will want the child out of the classroom during the time reading is being taught, and that may not always be possible. Additionally, with the development of the resource program, the school may be servicing students who were previously being serviced in another district. In this case, the entire school may need to learn about the new population of students.

Competency crisis arises when there is a lack of qualified personnel available to fill positions such as certified physical or occupational therapists. The school may not be able to find special education personnel experienced with the types of needs the students have. So, although the school has developed the expectation of a program through theory, they are unable to implement it. In this case there may even be identified student needs which remain unaddressed due to a lack of qualified staff.

Interpersonal roadblocks arise from a variety of situations. Regular classroom teachers may be possessive about their pupils, defensive about their teaching, and unwilling to make program changes. Very often classroom teachers and resource teachers share the responsibility of a given student. This responsibility may be broken down by subjects, or subjects may be shared. Although they need and want help with a student, regular classroom teachers may resent being told to “change their ways” in following an individualized program.

TRAUMATIC BRAIN INJURY

“Based on 1980 census figures, it is estimated there are seven million traumatic brain injuries per year in the United States” (Pollack & Savage, 1985). One million of these people are school age children and one in ten injuries are moderate to severe (Bush, 1986).

BRAIN STRUCTURE AND FUNCTION

In order to fully understand what occurs when a person sustains a brain injury, we must first have a clear understanding of brain structure and normal/typical brain functions.

The brain is composed of a substance the consistency of which can be described as stiff gelatine. Its volume cannot be compressed, but it can shift and move if violently disturbed. The brain "floats" in a bath of cerebral spinal fluid with a hard, unyielding skull (Hawley, 1984; Rosen & Gerring, 1986). The skull itself is a bony, hard shell which is designed to protect the brain from external, penetrating injury. However, inside the skull are interior bony protuberances against which the gelatinous mass may be forced during a sudden impact (Pollack & Savage, 1985).

The brain is the central organ of the nervous system the organ system of thought and activity both voluntary and involuntary (Rosen & Gerring, 1986). The brain consists of the cortex with two large cerebral hemispheres, the right and left; the cerebellum; and the brainstem (Hawley, 1984; Rosen & Gerring, 1986). The left hemisphere is believed to be responsible for verbal functions, including activities such as speaking, writing, reading, and calculation. The right hemisphere is believed to control visual spatial skills including visual memory, copying, drawing and rhythm. Each hemisphere is divided into four lobes; the frontal lobe, the temporal lobe, the parietal lobe, and the occipital lobe. Each of these parts of the brain are primarily responsible for specific functions. The brainstem consists of all the fibre tracts that exit and enter the cerebral hemisphere. It is responsible for regulation of temperature, heart rate, blood pressure, consciousness, appetite, respiration and other involuntary activity (Rosen & Gerring, 1986). The cerebellum is located under the occipital lobe and controls muscle coordination, maintenance of muscle tone and equilibrium (Rosen & Gerring, 1986).

TRAUMATIC INJURY TO THE BRAIN

Traumatic brain injury occurs from an externally inflicted trauma to the head. There are many kinds of damage that may occur from a head injury. They include damage to the skin, bone and brain; bleeding inside the skull; and/or brain swelling (Ylvisaker, 1985).

The force of a blow can cause the brain to swirl around and twist upon itself at the brainstem. A concussion or temporary loss of consciousness may occur (Marshall, Sadler & Bowers, 1981). If the loss of consciousness lasts for more than a brief period, the person is considered to be in a coma. A coma is the state in which a person does not open his eyes, does not speak and does not follow commands (Marshall, et al., 1981; Pollack & Savage, 1985). With a very severe blow, injury to the brain itself may occur. This is known as diffuse brain injury and is a direct result of the brain being bruised, when forcefully hitting the inside of the skull (Hawley, 1984).

Bleeding may occur as a result of damage to the blood vessels of the scalp, skull bones and brain. This bleeding is referred to as a hemorrhage. A hematoma is a mass of blood caused by a hemorrhage in a confined space. A hematoma may cause problems in two ways. First, the brain is deprived of proper blood flow to certain areas. Secondly, when bleeding occurs within the head, blood builds up within an area enclosed by bone. This build-up of blood may result in increased intracranial pressure which acts to compress the brain tissue into a smaller space, and may cause further brain injury (Marshall, et al., 1981; Ylvisaker, 1985).

Recovery from brain injury tends to follow a predictable pattern. However, the speed of recovery and the extent to which a person ultimately recovers will vary widely depending upon the location and severity of the brain damage (Brown, 1985; Pollack & Savage, 1985). In the early stages of recovery, significant changes may occur (Hawley, 1984). The process will then slow down and may continue gradually over several years. "Recovery occurs partly

because the swelling in the brain is reduced over time and partly because other brain cells tend to "take over" the functions of the destroyed cells" (Brown, 1985). An individual may plateau at any stage of recovery.

SCHOOL IMPLICATIONS

A child with a TBI is likely to have problems with cognitive-intellectual skills, psychomotor and perceptual skills, and psychosocial-emotional-behavioural skills (Pollack & Savage, 1985). The problems that any given person will have in any of these areas will vary depending on the severity and location of their injury. There are typical deficits which occur following a brain injury. These deficits, which are expanded on in the following paragraphs, lead to specific behaviours which will affect a brain injured student's ability to participate in a school program (Adamovich, et al., 1985; Brown, 1985; Burns & Gianutsos, 1984; Cohen, 1986; Pollack & Savage, 1985; Rosen & Gerring, 1986; Savage, 1986).

A student may have lost his/ her ability to focus and sustain attention; he/she may be easily distracted and display poor concentration (Brown, 1985; Pollack & Savage, 1985; Rosen & Gerring, 1986). This may cause the student to have difficulty remaining on task without frequent reminders. He/she may have difficulty following instructions, and be unable to shift attention from one task to another. This student would need assistance beginning an assignment and at transition times (between subjects or classes). A student's response time may be slow or delayed in intellectual as well as physical tasks. A student with slow or delayed response time may need to have unlimited time for assignments and/or tests.

Memory deficits are extremely common in brain injured individuals (Brown, 1985; Pollack & Savage, 1985; Rosen & Gerring, 1986). Loss or deficits in short term or "recent" memory may interfere with a student's ability to succeed in tasks involving new learning. Long term or "remote" memory loss may be displayed in apparent forgetting of previous learning. Memory loss may cause a child to have difficulty returning to a task after an interruption. Additionally inconsistent memory function may cause misinterpretation of academic or social information and may, therefore, cause the student to feel confused and disoriented.

A TBI student may have difficulty with tasks that involve organizing information (Brown, 1985; Pollack & Savage, 1985; Rosen & Gerring, 1986). This includes summarizing, sequencing, outlining, and differentiating more relevant from less relevant information. He/she may be unable to manage two or more tasks simultaneously which involve holding onto a piece of information while processing another. Loss of initiative maybe visible in a child's difficulty maintaining social relationships and in his/her difficulty beginning a task without cues or prompts. Impaired problem solving abilities may include inflexibility with the selection and use of learning strategies, and a limited ability for divergent and convergent thinking. In addition, an inability to anticipate consequences of actions may cause difficulty in planning for the future.

Needless to say, there is not one formula which can be followed in educating a traumatically brain injured student. No two brain injured people will present the same combination of deficits or needs. An educator must consider such factors as the location and extent of damage, the severity of the injury, the student's previous academic ability, and the stage of recovery at which the student is re-entering school.

It is critical for teachers to be aware of what a student's academic abilities were prior to the injury (Pollack & Savage, 1985; Rosen & Gerring, 1986). This knowledge will ensure appropriate goals are developed. If a student had a reading disability before the accident, he/she will still have the disability, and it may have become more severe from the injury.

Traumatically brain injured students re-enter schools at various stages of recovery. Some students return to school directly from the medical hospital while other students may participate in a rehabilitation program after they leave the hospital prior to returning to school. A student's programming must reflect his/her stage of recovery. For instance, if a student is at an early stage of recovery he/she may not have the endurance and stamina to participate in a full day of school. Additionally, a student at an early stage of recovery is likely to be regaining function daily, thus changing needs on a frequent basis. A student who is a few years post onset of an injury has probably plateaued in many skill areas and although he/she is still making gains, it is at a reduced speed.

Many researchers (Brown, 1985; Cohen, 1986; Savage, 1985, 1986; Pollack & Savage, 1985; Rosen & Gerring, 1986) seem to agree that one of the most critical factors in facilitating a student's successful school reintegration is the education of all persons involved. Staff education on traumatic brain injury will typically occur only if a school is faced with the re-entry of a TBI student. Therefore, the special education teacher who is employed at the time the student returns to school will presumably become educated in traumatic brain injury. However, if that teacher leaves, it is not likely that the replacing special education teacher will bring sufficient knowledge on TBI to adequately address the student's needs. A TBI student will continue to exhibit deficits for a period of years, thus requiring educational supervision for an extended period of time.

The second most critical factor is adequate communication between all persons involved. Frequent communication between staff is helpful in maintaining a "handle" on the student and in monitoring recovery patterns which may affect programming. Informal staff communication may lead to an early detection of the need for program changes.

SUMMARY AND DISCUSSION

There are some direct connections between considerations which must be taken into account when educating a traumatically brain injured student, with some of the typical characteristics of rural special education programs.

The high incidence of personnel turnover in rural systems intensifies the problems which arise from the lack of educated personnel available to work with TBI students. The frequent personnel turnover seen in rural school systems suggests the possibility that, either the staff education would need to be continual or that uneducated staff would be working with the traumatically brain injured student.

The informal communication style which rural schools typically employ may serve as an advantage to the TBI student. If the staff is communicating on a frequent and informal basis, it is likely that they will identify the need for program changes before the program becomes inappropriate.

Harris and Mahar (1975) identified four typical problems which rural schools experienced upon implementing a resource program. These problems are: lack of organizational readiness, system shock, competency crisis, and interpersonal roadblocks. These problems are exacerbated with the re-integration of a traumatically brain injured student.

The problem of "lack of organizational readiness" may occur for a variety of reasons. It may be because no preparation was made and no plan was developed prior to the day the student arrived at school. It may be that an extensive plan was developed, however by the time the student arrived at school he/she had recovered to the extent that the plan developed had become inappropriate. For instance, the plan may have been that the student be based in the special education classroom. Yet when the student arrived at school it was clear that given the further recovery he/she had experienced, it would be more appropriate to place him/her in regular classes. In this situation the classroom teachers may not be prepared to serve this student. The classroom teacher must be aware

of the adaptations and modifications that need to be made to facilitate successful reintegration. The teacher will need time and possibly assistance in developing appropriate lesson plans and teaching strategies.

A school will likely experience “system shock” upon reintegrating the TBI student. One way this will be evidenced is in the behavioural issues with which the school will be faced. The TBI student may display negative behaviours that look familiar to the staff (Savage, 1986). However, the student may not respond to disciplinary measures as other students have, for the etiology is different. Traditional behaviour modification requires more cognitive abilities than many TBI students possess. A student may have deficits in memory, judgment, cause/effect relationships, problem solving, and/ or the ability to control his/her behaviour (Cohen, 1986). In this case traditional behaviour management would be inappropriate. It is imperative that the school staff and the student body understand that the traumatically brain injured student’s actions are not “intentional misbehaviours, but are inappropriate behavioural sequelae resulting from his/her head injury” (Savage, 1986). When a unique behavioural program is developed and implemented, the entire school will need to learn the procedure to ensure consistency.

“Competency crisis” will arise when a TBI student has major physical or occupational therapy needs. The brain injured student will require extensive service for a short period of time. This is a problem because most rural schools employ physical and occupational therapists on a part time basis, possibly one day/week. The TBI student may need PT daily due to the rapid changes he/she experiences. Additionally, the physical, occupational and/or speech/ language therapist may not have any experience with traumatic brain injury and he/ she may lack the knowledge of how to address a TBI student’s needs.

“Interpersonal roadblocks” may develop from classroom teachers having a difficult time understanding the importance of mainstreaming a traumatically brain injured student. Since a TBI student may display splintered skills and needs, the classroom teacher may feel it is more appropriate to place the student in special education programming. However, the teachers need to understand the importance of normalization in fostering social skill development. “The placement of a head injured student in an inappropriate special needs program may only further complicate cognitive recovery and the redevelopment of psychosocial skills” (Savage, 1986).

Many of the obstacles that rural schools face when reintegrating traumatically brain injured students stem from financial stress. The financial demands are extensive and may include any of the following: making building alterations; providing transportation; supporting out of district placement for severely injured students; therapeutic services, the purchase of specialized equipment such as computers or augmentative communication systems; and supplying home tutors. A district integrating a traumatically brain injured student may encounter any one or combination of the above mentioned problems.

Two major conclusions can be drawn from the information presented. The first relates to teacher education. It is clear that there is a critical need for teacher, particularly special education, training programs to include issues relevant to both teaching in rural schools and to the dynamics of traumatic brain injury. Given that two thirds of all school districts are considered rural (Helge, 1980) and that approximately one hundred thousand school age children receive a traumatic brain injury each year (Bush, 1986), it seems only logical that significant attention be paid to these two subjects. However, the research does not suggest that any such training is currently included in many teach/special education training programs.

The paucity of staff education in these two areas partially explains why the re-entry of a traumatically brain injured student into a rural school system is such a challenge. Additionally, with the combination of the numerous school district variables and the uniqueness of each brain injury, no two re-entry experiences will be the same.

The second major conclusion is the importance of systematic planning prior to a traumatically brain injured student's return to school. Typically, a student will be transferring from a hospital or an acute rehabilitation facility. These facilities fall into the category of "most restrictive environment". With the implementation of PL94-142, placing special needs students in the least restrictive environment possible became a priority goal. Clearly there needs to be a great deal of thought and work put into the planning of this potentially severe transition in order to make it as successful as possible for the student . There are a number of people involved in this process, and roles are often nebulous. At this time there is no strict definition of exactly who is responsible for the specific jobs which need attention. Some literature stresses the parents' role in educating the school about head injury (Burns & Gianutsos, 1984; Savage & Carter 1985); however, parents do not always assume this role. Who then should assume the role; the school district, the rehabilitation facility, an advocacy agency? There is no definitive answer. If all persons involved discuss and acknowledge who will assume which responsibilities, great success will likely be noticed. Roles will then be clarified and essentials will be taken care of (i.e., pre discharge meetings with the family, school and student; staff, school and peer education; etc.), not neglected for the inexcusable reason that each person thought "the other guy" was doing it. Jobs will also not be duplicated or contradicted if the responsibilities are clarified from the start. In addition to having knowledge on traumatic brain injury, the parents and district staff must fully understand the laws (PL94-142 and Section 504, Vocational Rehabilitation Act Amendment). With this knowledge they can properly advocate for the rights and protection guaranteed to handicapped individuals under these laws.

There are critical factors for teachers to consider when educating a TBI student. The more people that are aware that attention needs to be paid to the re-entry process, the sooner services to students will improve. I stress the concept of re-entry being a process which continues over time, not an isolated event. Each re-entry experience is unique, determined by the community variables as well as the individual's injuries. As education increases, services will improve.

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