SERVING THE EDUCATION NEEDS OF THE TRAUMATICALLY BRAIN INJURED STUDENT AT MODERATE COST

Each year 30,000 to 45,000 Canadian people sustain a traumatic brain injury. The majority of these people are under the age of 30. Until the mid-1980's there was no single existing federal, provincial, or private agency concerned exclusively with the unique problems facing persons who live with the effects of head injury. This population was inappropriately placed in psychiatric institutions, schools for the retarded, or nursing homes. Unfortunately, even today, the educational needs of most children who have suffered a head injury are not being adequately met, not because of intent, but due to lack of knowledge. In the U.S., the medical and rehabilitational phases of head injury have made significant gains in the past years. More and more physicians and rehabilitation specialists are becoming involved in research and program planning. In comparison, relatively few educators have become aware of this growing dilemma, with even fewer numbers becoming involved with research and program planning.

Brain injury is a very complex phenomenon. Research has shown that in virtually all forms of traumatic brain injury, thinking and behaviour may be altered. The areas which are most affected include cognition, communication, psychosocial, academics, and psychomotor.

Due to the perceived low incidence of traumatic brain injury, it is a financial necessity for school districts to place these students in special education classrooms on the basis of their secondary disability, such as learning disability, behaviour disorder, mental handicap, or physical disability. Additionally, there is no teacher certification for Traumatic Brain Injury as there is for other disabilities. These facts are further complicated by the lack of awareness or education about Traumatic Brain Injury by personnel of most school districts or special education cooperatives. Therefore, professionals concerned about the educational welfare of children with traumatic brain injury must work within the framework of traditional special education or regular education classrooms. It is of the utmost importance, however, that the unique educational needs of this population be considered when these students are placed in classrooms whose primary concern is that of other disabilities. Both the financial needs of the school district as well as the educational needs of the students can be satisfied by instituting support services

based on the work of Cook and Harrington (1987). Their four-point educational service model of psychosocial, cognitive, educational, and vocational can be adapted for any traumatically brain injured child in any placement.

PSYCHOSOCIAL COMPONENT

Students returning to school following a traumatic head injury often experience difficulties with reduced impulse control as well as problems of noncompliance. Social obstacles can also emerge in the areas of poor social judgment. Students often exhibit poor social perception displaying the inability to interpret nonverbal cues to other's feelings. Additionally, disinhibition, apathy, denial of disability and low frustration threshold have all been reported as psychosocial impairments associated with head injury. It is difficult for many teachers to understand these behaviours; it is often assumed that all children can "control" their behaviour if they try. Teachers need to understand the physical and medical ramifications of frontal lobe damage as it pertains to psychosocial behaviour. *Although the behaviour problems may stem from the trauma which the brain has suffered, steps can be taken to help the child to manage his/her behaviour. Initially, measures should be taken to restructure the learning environment to fit the student's needs.* The emphasis must then gradually shift to helping the child to master adaptive techniques to restructure his behavioural needs to fit the environment. The goal of such a program must be to strike a balance between accepting the consequences of the disability and allowing inappropriate behaviour.

Several methods are useful when attempting to remediate inappropriate behaviour of traumatically brain injured students. Head injured students seem to function best in a well-controlled, highly structured environment. (Savage 1984) A structured environment indicates clear task orientation for the student which is well monitored by the teacher who encourages and praises even the smallest efforts toward a goal. In this type of learning situation, the student is met by predictable responses. The individual knows what to expect because rules, assignments, schedules, special events, and individual expectations are agreed upon and written down by the teacher and student.

To help avoid behaviour disturbances, it is important that the teacher carefully monitor the head injured student, understanding and anticipating the frustration level. When the student is initially returning to the educational setting, the teacher must intervene before the student experiences frustration, changing the activity and redirecting interest. Gradually, the student must be taught socially acceptable methods for dealing with frustration. As the student is learning these methods, the teacher can begin to allow frustration to occur while assisting the student with alternatives to the situation, such as briefly leaving the room, resting, or running outside to relieve pressure. The teacher must follow the frustration alleviation devices with praises for the student's attempts.

The use of behaviour modification procedures with head injured students has been met with mixed reviews. The memory deficits associated with head injury can affect its usefulness, however, two approaches regarding behaviour modification must be considered: the suppressive approach and the constructive approach. When the suppressive approach is used, the undesirable behaviour is extinguished while providing the student no appropriate outlet for emotions. In comparison, the constructive approach restricts the unwanted habit and offers an alternate method of dealing with the situation. Efforts to use the suitable replacement behaviour are praised and reinforced.

The teacher must fully analyze the student's psychosocial disabilities which result from head injury so that decisions can be made regarding the necessity to modify the behaviour or modify the environment (Trexler 1987). All attempts should be made to help the student adapt to his/her environment, however, a student may be unable to modify his undesirable behaviour, either because of the trauma which he has suffered or because of his place

on the continuum of rehabilitation. The student may not have progressed enough psychosocially to be able to deal with certain situations. It is then the teacher's responsibility to change the condition which is provoking the inappropriate deportment. The ultimate goal of any applied behavioural analysis program must be to help the student to develop specific adaptive skills which will aid in coping with external conditions and reinforcing such attempts.

Another procedure to aid in psychosocial skill development is that of role playing and rehearsal. This method provides activities which allow the student to explore his attitudes, aspirations, and behaviours. The student is given the opportunity to grapple with personal issues and discover or clarify his value convictions by engaging in the process of choosing value options. The student then role plays different situations in which these values might be applied. It is imperative that the student with traumatic brain injury be allowed to contemplate these issues in a quiet time rather that during a stressful situation. During tranquil periods the student is better able to choose freely, after thoughtful consideration, the most appropriate method of dealing with a certain situation according to his own moral value system. Offering thought provoking situational questions such as "What would you do if...?" or "How would you handle...?" are methods of initiating such value clarification.

It is important to stress that generalization of concepts is minimal for head injured students, therefore, rehearsal or behavioural situations in several locations is essential. It is best that these practices involve as many different people in as many different settings as possible, in order to aid in the generalization of the concepts. It is imperative that the student has the opportunity to use these skills in the "real world setting", not just in the classroom. Field trips and home visits are essential.

Counselling is an indispensable component of the educational program for the head injured student. In the school setting, this can be achieved through the services of the school social worker, psychologist, or counsellor. Weekly time allotments should be specified in the student's Individual Education Plan through the Special Education Department. If private therapy is utilized, the teacher should keep close contact with the psychologist or psychiatrist, discussing problems which appear in the classroom. The teacher should aid the work of these professionals, bridging the gap between individual therapeutic sessions and the educational setting.

A support group made up of head injured survivors is an excellent tool. Students are able to discuss their shared frustrations of returning to school after suffering a traumatic brain injury. Members of the group are able to lend support to each other while creating necessary trust and friendships. No one can understand the ramifications of head injury as well as someone else who has suffered from the same trauma. These support groups can be established through the rehabilitation facility, local Head Injury Association, or through the special education system. It is often fundamental that these sessions be led by the teacher or counsellor who acts as a facilitator of discussion; however, the role of this facilitator is merely to help direct the students' needs into meaningful dialogue. The students should have the major role in deciding the topics and events of the group, while the facilitator helps to channel energy.

An added benefit of support groups is that often time's students begin to act in the role of "Big Brother/Big Sister," helping the newest student to become better acclimated to the educational climate. This system not only helps the new student to make the adjustment easier but also helps to build the self-esteem of the older student.

Students with traumatic head injury are in need of a "home base." This is a place where the student has a quiet time and place to deal with frustration, overload, stress and fatigue. Here, the student is able to rest or re-group his thoughts. This helps to create a structured place in an unstructured environment of school. If the child has been main-streamed into the regular educational setting, this "home base" could be with the special education teacher, where the child is able to store books and supplies, post schedules, and leave notes to aid memory. This special

educator or other auxiliary personnel could also act as a liaison to help aid in the child's transition from patient to student. This liaison can help the faculty and staff to understand the ramifications, adaptations and accommodations necessary to the head injured student. It is also helpful for the parents to be able to depend on one person from the school to help alleviate their fears of their child's return to school. This liaison is able to help the parents to allow the child more freedom. The liaison can communicate frequently with the parents, reminding the parents of assignments and responsibilities from school and reminding the child of appointments and commitments from home. Often times, an event occurs at school which causes the child anger. When reaching home, the child is still angry but has forgotten the cause of the anger. Through frequent communication with home, the liaison is able to forewarn the parents of possible outbursts and explain the rationale. The parent is then better able to cope with the situation and help the child to understand his/her feelings.

When considering the cognitive component of the educational program of traumatically brain injured students, the assumption must be made that basic cognitive rehabilitation has been implemented at the rehabilitation facility from which the student has been discharged. It is the responsibility of the school to implement the successive program of teaching meta-cognitive skills. Meta-cognition is defined as knowing how to go about the process of learning. Efficient learners know efficient learning strategies. *(Many students who premorbidly knew these strategies must now be taught specific methods of how to approach a learning situation. These students are in need of instruction in systematic thinking.)*

Efficient learners are active learners who interact with the material. These learners ask themselves questions, organize their thoughts, integrate new material with past experiences, and monitor their own progress. Often times, students with a traumatic brain injury do not know how to control and direct their thinking nor do they know how to gain more knowledge or how to remember what they previously learned. These students need to be taught specific techniques to help them become active learners. Although they may have possessed meta-cognitive skills, premorbidly, they must relearn these skills.

One technique which will aid in this attempt is that of self-questioning (Lerner 1985). The student is taught how to ask himself questions about the presented material or assignment. This technique can also be called verbal meditation. This helps the child to organize the material and behaviour before beginning a task. Such questions as "What do I need to do?" "How can I do it?" and "Am I proceeding correctly?" are of help.

Cognitive behaviour modification is a second technique. This method utilizes the principle of teacher modelling as an effective learning tool. The first step to this procedure is that of the teacher modelling the correct method of approaching a learning task. As the teacher presents a new concept for learning to the students, the teacher discusses aloud the steps which are necessary for completing the task. In a situation such as approaching a new math problem, the teacher would verbally rehearse the steps with the students, such as "This appears to be an addition problem. I can tell by looking at the 'plus' sign. If it is an addition problem with a plus sign, I must have to add numbers together. I can take two balls and add them to three balls. Now I can count the total number of balls which I have. The answer must be 5." Following this procedure, the student then performs the same task while the teacher verbally "walks" the child through the correct steps. After mastering that procedure, the student then orally "walks" himself through the steps while the teacher monitors the learner's verbal steps. The fourth step is for the student to silently talk himself through the same steps while the teacher observes. When the student is able to successfully work out a problem or exercise utilizing each of these steps, the student is ready to complete the assignment without verbal or nonverbal cues. If a problem arises when left to his own, the student is able to back up, with the teacher's assistance, in order to insure success.

Because memory deficit is often the most detrimental loss with which traumatically brain injured students must learn to cope, learning new techniques for memory improvement is an essential component of any meta-cognitive program. These students require new aids in order to anchor old knowledge to new material. Memorization is a process involving three steps, namely: selecting information for storage, entering this information into long term storage, and designing a trigger to enable the learner to retrieve information. Without utilizing specific strategies at each of these levels, the traumatic brain injured student is unable to remember new information which is presented.

No person remembers everything which is seen or heard. Although people use a touch-tone telephone every day, most people are unable to remember which two letters of the alphabet are missing from the keyboard. This is because most people do not make a conscious effort to observe these letters. A learner must make decisions as to what information is relevant to the learning task, as well as what information is not necessary for learning or completing a task. To select the correct information, the learner must totally understand the passage or concept which is to be remembered. The learner is able to accomplish this by putting the new material into his own words and relating this material to a past or present experience. This is a skill which must be taught to traumatically brain injured students upon return to the educational setting.

At this point, the information is entered into short term memory. Students with a traumatic brain injury must be careful not to overload this part of memory. If overload occurs, the information will fail to transfer into long term memory and will be quickly forgotten. In order to avoid this situation, it is necessary for the student to take scheduled study breaks after short periods of study (30 minutes). The length of optimal study varies for each learner.

After selecting the information for storage, the learner must enter this information into long-term storage. To become permanent information, the student must repeat, recite, review, and rehearse the material in order to move the information from short-term memory into long-term memory for permanent storage. Rehearsing the new information involves reviewing and reciting the information using spaced review techniques. The new material should be rehearsed immediately after presentation and then reviewed after thirty minutes of studying. Recall will improve 80%, if the information is rehearsed a third time within 48 hours.

It is necessary for the student to design triggers in order to retrieve information from long-term storage. These cues need to involve a strong coding system to enable the student to locate information from memory. Mnemonic techniques such as acronyms, visual imagery, and colour coding notes for sequential order have been found beneficial. Also helpful is over-learning information through the use of flash cards, writing the material, and reciting information aloud. It is advantageous to organize and associate similar items together for optimal learning. Controlling interference is an important consideration when studying. The study environment should be as free from distractions as possible. Studying the same subject in the same place each study session aids in stimulating memory.

The S.O.R.R. method of retention has been found to be a valuable study tool. First, the student must *select* significant ideas. This selection process is used to move key points from short-term memory into long-term storage. The main concepts should be supported by details to better understand the gestalt. *Organizing* the material involves discovering relationships between ideas as well as organizing longer lists into smaller units. Thirdly, the student *recodes* information by summarizing concepts and rephrasing ideas. Key words are easier to store in long term memory than entire passages. Finally, *rehearsal* is necessary to complete the memory process. As previously stated, this step involves repeating, reciting, reviewing, and rehearsing information. This step can be accomplished through the use of notecards. The student selects the key concept for the front of the notecard. On

the back of the notecard the student organizes and recodes the material. Rehearsing is quizzing the information from the notecards. This method also applies to learning material within a textbook. The student selects significant information by underlining and highlighting key words. Writing notes in the margin of the text helps to organize and recode. Rehearsal takes place as the student covers the text to quiz.

Organization of materials and time is a difficult notion for students with traumatic brain injury. Three-ring notebooks appear to be a useful tool for organizing class notes, handouts, and assignment sheets. Separate sections should be employed for each subject with folders in each section to file class handouts. A large monthly assignment calendar helps to make the abstract concept of time more concrete as the student is able to write down assignment due dates and plan study time accordingly. The student needs to be encouraged to write down assignments immediately to aid memory and then to check the calendar daily for appointments and assignments. Home and school communication can be enhanced by frequent checks and updating of this calendar by teacher, parent, and student.

Limited attention and concentration can cause deficits in learning. Each of the three phases of attention require special consideration. First, the student needs to come to attention, which means that he is ready to approach a learning situation. This also means that the teacher should not begin instruction until each student demonstrates readiness. Focusing attention is the second phase. This involves the ability to attend to relevant stimuli while ignoring irrelevant stimuli. Pertinent materials should be designed to “catch the student’s eye”, while non-relevant information should be as unobtrusive as possible. Thirdly, the student needs to sustain attention to complete a learning task. Extended concentration should be the goal of any student, yet learning attempted beyond the realm of realistic learning time is foolish. Therefore, the teacher should attempt to gradually lengthen the time during which a child is able to learn, while at the same time remaining keenly aware of the student’s limited optimal learning period.

EDUCATIONAL COMPONENT

Students returning to school after head injury can be placed in many different educational settings. Many students are placed in regular classes and are in need of no special services to augment their education (Savage 1984). Some students are able to return to the regular class with the support of auxiliary educational personnel, such as Speech, Occupational Therapy, Physical Therapy, Social Services, or Psychological Services. Still, other students are in need of a resource classroom which is staffed by a special educator. The student receives special education for part of the day (less than 50%) and attends regular classes the remainder of the day. A more intensive program is required for other students who are placed in self-contained classrooms. These students are educated by the special education teacher for most or all of their school day, although they may be main-streamed for some classes. If students are in need of an intensive educational program, they are often placed in a full time, twelve month residential facility designed to serve the brain injured child. Often times, students will begin with the most restrictive environment and proceed to the least restrictive, as they progress cognitively, educationally, and psychosocially.

Regardless of placement, the majority of students in any classroom will not have suffered a traumatic brain injury. The head injured student will undoubtedly be a minority if not the only student with a head injury in the classroom. It is imperative that the teacher understand the different learning style with which the head injured student approaches the educational situation. Initially, the head injured student will be “relearning” material. Depending on the severity of the injury, the child will probably have to regress from his premorbid education, that is “relearn” concepts which were previously in his educational repertoire. The other students in the classroom will be learning these concepts for the first time. *Major differences arise when “learning” material and “relearning”*

material. Often a brief review of material can activate the memory of the concept and learning can proceed at a rapid rate. Yet other times, due to memory deficits, it is necessary to review and totally re-teach a concept in order for the head injured student to master the idea. Hence, teachers must be keenly aware of the individual nature of working with these students and be prepared to be flexible in their teaching styles. What may take a short period for one, may take a long period for the next. This flexibility also applies to the placement of the head injured student. During the initial testing and assessment, the child may be lacking academic skills which will be quickly regained through "relearning". The school personnel must be willing to frequently review the child's educational placement and re-evaluate, if necessary. Although cognitive growth continues, this evaluation of progress is especially necessary during the first year post-trauma, when cognitive recovery is the greatest. It is important to note, however, that sporadic academic growth spurts can be followed by plateaus of learning. The teacher must encourage the student during these times of seemingly little progress.

The focus of the educational program can be twofold, namely, restoration of competencies and/or compensation of deficits (Trexler 1982). It is important to make the distinction between what the child is able to accomplish and what educational requirements are beyond the perimeters of the child's abilities. It is best to attempt to teach the child concepts using traditional methods and requirements, yet each student may have certain limitations which must be considered. As an example, it is admirable to require a child to learn basic math facts. If, after repeated attempts and a variety of procedures, the child is still unable to learn addition facts due to a memory deficit, it is appropriate to teach the child the use of a calculator as a compensatory device. *Certain skills can be restored, whereas other skills cannot, due to the nature of the head injury.* This decision is an individual one which will vary with each new or reviewed concept.

Head injured students often suffer perceptual disorders following trauma. Auditory or visual perceptual deficits are a common problem. The teacher should evaluate the child's modality preference, either visual or auditory, and attempt to teach material through the preferred channel. At the same time, attempts should be made to improve the weaker modality or to teach compensation techniques for the deficit areas.

Study skills are the prerequisites for learning. Most students need to be educated in higher level skills necessary for academic success, such as effective content reading skills, note-taking, test studying, and essay and research paper composition. Although a study skills curriculum is beneficial to all students, it is a necessity for head injured students returning to school. Brain injured students need to be specifically taught these skills so that these skills become automatic and so that the lack of these skills does not interfere with the learning process. Study skill courses are often offered either at high schools or at local community colleges. Studying technique instruction can also be effectively incorporated into the school curriculum.

VOCATIONAL COMPONENT

The vocational component of the educational program of the head injured student is often built into other areas of the program. Vocational investigation is many times an integral part of the special education curriculum or offered as a special course. In some school systems it is the role of the guidance counsellor to offer vocational counselling.

The vocational needs of the head injured student are frequently different from other students. Trauma may have drastically changed the career goals of the student. It is necessary for the brain injured student to make new vocational goals which attend to the altered condition of the student. These goals should be realistically planned, based on the student's current abilities.

After returning to secondary or post-secondary education following trauma, the student should not rush career plans. The abilities and disabilities of the student are constantly changing. Sufficient time must be given to accurately assess individual strengths and weaknesses. It is important that the student be given time to accept the new person of self before making major career plans. Chronological age is not a factor; vocational readiness is the key.

Any occupational choice must be that of the student. Other people may help to guide the student's decision-making process, but the ultimate decision belongs to the student. The head injured student must feel in control of his own destiny, yet facilitators can help the student to set realistic goals based on his abilities and limitations.

When any person is choosing professional options, three considerations must be kept in mind. First, the student must evaluate his/her current abilities. Physical, cognitive, emotional, and academic tenacities and inaptitude must be considered. In addition, one must assess past experiences which might prove useful in career preference. Previous jobs, volunteer work, scholastic clubs, and community involvement are aspects of a student's life which may influence vocational choices. Finally, it is beneficial to examine the past and current interests of the student. Often times a link can be found between what the student enjoys doing during recreational activities and a suitable career. This is especially helpful when the student's premorbid vocational choice is no longer a viable option. The student who previously had chosen to be a teacher, but who no longer has the academic ability to pursue this career, may be able to become a day care worker in order to satisfy the desire to work with children.

Many commercial tests are available which help to assess a person's current abilities, past experiences, and past and current interests. The results of these tests are in the form of vocational options which are an appropriate match for the above areas. Certain vocational assessment instruments lend themselves to the student who is planning to attend college, while other diagnostic tools are better suited for the student who is interested in attending a trade school or a short course of instruction in the area of interest. For the best results, the test should be matched to the student's level of desired or attainable education.

In summary, although it is important for teachers to understand the educational diversity of the head injured population and the diversity of needs with each student, the needs of the traumatic brain injured student can be met in traditional educational programs. With moderate modifications on the part of the school system and the teacher, the head injured student can achieve his/her educational needs at a moderate cost.

Author: Marcia Nordlund