Cognitive Impairments

Students who have experienced an ABI are often left with cognitive impairments. These impairments can vary in nature and severity relative to the part of the brain that is injured and the amount of damage that has occurred. Students who are left with cognitive impairments will likely require special teaching and learning strategies to help them compensate for their cognitive deficit. Areas of cognitive functioning that may be affected to a greater or lesser extent include the following:

Acquisition of new knowledge Memory Organization Attention and concentration Perception Reasoning Problem-solving Initiation

The following section lists general strategies that have proven effective for each of these cognitive deficits. **Please note that it cannot be emphasized too strongly that none of these is guaranteed**. Educators must be willing to experiment until they find a combination of strategies that works for the individual. Furthermore, the strategies may vary over time as the student progresses through stages of recovery or through developmental stages.

It is also important to remember that many cognitive skills are interrelated. For example, difficulties with memory will result in organizational difficulties, and attention problems will make the acquisition of new knowledge more of a challenge. Just as interrelationships exist between cognitive skills, so too does a relationship exist between the strategies utilized to assist students with ABI. While a strategy may be listed for memory, it may also be effective in organization and the acquisition of new knowledge. While strategies are listed separately, any and all can be used where effective.

4.8 - Cognitive Skills and Strategies

Acquisition of new knowledge

Students with ABI will often return to school with previously learned knowledge relatively intact. A student who knew his or her multiplication tables at the beginning of Grade 3 may come to school following an injury with those times tables well established in his or her memory. Because of this, it may seem that the student will be ready and able to similarly acquire new information. For students with ABI, this is often not the case.

Challenge to Student	Strategies
Acquisition of new knowledge	Do not assume prior learning but also do not assume that all knowledge and skills taught prior to injury are no longer present. Determine the student's preferred learning style and instruct accordingly. Present new material in small chunks. Repeat information frequently and summarize it. Offer a wide range of opportunities using different modalities to practice new skills. When teaching new concepts, include many relevant examples. Make the material to be learned relevant and significant to the learner. Give meaning to rote data to enhance comprehension and learning. Employ frequent checks to ensure comprehension. Employ feedback sessions with the students to let them know how they are doing. Reinforce information with a variety of visual/auditory aids. Allow students additional time for review.

	Involve students in planning a special activity to assist with practicing newly learned skills.
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Memory

Students with ABI will show memory deficits, not only in their ability to recall material but also more globally in their ability to function effectively within the demands of the school setting. They are often unable to complete homework, and follow directions, as well as learn new information.

Challenge to Student	Strategies
Memory	Provide relevant links for new information to prior knowledge. Utilize techniques such as the use of special words or examples as cues for information. Teach students to categorize or chunk information into smaller sections to aid in retention. Have students generate their own memory cues. Repetition. Create an environment where students do not have to rely heavily on memory Teach students to use memory aids such as calendars, Post-It notes, check sheets ,and assignment books. Encourage the use of a journal to assist students in keeping track and orienting themselves in a school environment. Create an assignment sheet for students to carry with them. A teacher or a "buddy" can ensure it is filled out after each class. Use visual cues. Utilize mnemonic strategies (e.g., HOMES = Huron, Ontario, Michigan, Erie, Superior to remember the Great Lakes). Use rhyme, song, drill where appropriate. Chunk work into manageable pieces.

Organization

Within a school setting the ability to organize material learned as well as tasks assigned is an essential component of being a successful student. Students with organizational difficulties as a result of ABI will have difficulty completing such tasks as performing a task in sequence, keeping track of assignments, even following a schedule.

Organization Establish and maintain daily routines	Challenge to Student	Strategies
Provide written daily schedule for students to refer to a if necessary review it at the beginning of each day. Provide an outline that is coordinated with each class lecture and have the students make notes for each session. Have frequent notebook checks and reorganization. Keep a duplicate copy of handouts and materials for the students who misplace work. Colour code all materials associated with each class.	Organization	Provide an outline that is coordinated with each class lecture and have the students make notes for each session. Have frequent notebook checks and reorganization. Keep a duplicate copy of handouts and materials for those students who misplace work. Colour code all materials associated with each class. Write a checklist of steps for completing complex tasks. Provide outlines for written notes. Break instruction down into simple steps and have students check off each step as it is completed.

outside at recess). Teach study skills. Provide verbal encouragement cues after the completion of each step such as "good," "what would you do now?" Conduct feedback sessions with the students to let them know how they are doing. With the agreement of the student or parent, assign a buddy, or buddies to assist the student with such tasks as opening his/her locker, collecting the correct materials, keeping track of schedule.

Attention/concentration

Students with ABI often need to work in environments that adults with brain injuries could not tolerate. Classrooms that are overly stimulating with continually shifting cognitive tasks are the norm in most schools. Students with attention and concentration difficulties respond best to structure or �brain injuryfriendly� environments, which allow for predictable, organized, and consistent routines.

Challenge to Student	Strategies
Attention/concentration	Provide consistent, predictable, regular routines. Provide appropriate student work/study areas that limit distraction. Set up a "quiet" area where students can focus and calm down. Place student with ABI away from distracting areas such as the door and windows. Monitor student seating and take note of peers to see if being in close proximity with certain students increases or decreases certain behaviours. Emphasize interest. Recognize the signs of attentional drifts and be prepared to redirect as necessary. Signal when a shift of attention is required.

Perception

Students with perceptual difficulties may be unable to recognize features and relationships among features such as print, three-dimensional objects, and even orientation within the school. These perceptual problems may also exist within the auditory realm, leading to difficulties in perceiving spoken directions.

Challenge to Student	Strategies
Perception (Vision)	Check for too much visual stimulation. Are the classroom walls too busy? Keep visual space clutter-free. Contrast postings to allow student to differentiate and pay attention to items of importance. Separate out important information in print. Use arrows and highlighters to orient the student. Use multi-sensory presentation where possible. Provide visual cues for directions when moving from room to room and practice with the student. Post class schedule and class rules. Post the student's individual schedule in an easily accessible place for individual use. Keep closet doors closed and shelves covered when not in use.

	Maintain for the student a tidy workspace that reduces distraction. Be sure the student has an unobstructed view. Provide repeated or longer viewing times. Use an arrow or key word on page to direct student. Consider the use of study carrels.
Perception (Auditory System)	Keep classroom noise slightly below conversation level unless otherwise recommended for hearing. Establish eye contact before speaking. Highlight important words and instructions. Use multi-sensory presentation where possible. Be clear and specific with directions and check for understanding. Obtain and maintain eye contact with giving instructions. Establish a nonverbal cueing system that will remind student to pay attention. Use touch or signalling to get student's attention. Position the student for optimum hearing. Be aware of extraneous noise and eliminate where possible. Consider the use of study carrels.

Reasoning

The ability to use past experience from which to draw reasonable conclusions as well as the ability to analyze current information to explore and consider possible actions may be compromised for students with ABI. Students may have difficult thinking in abstract terms and be able to deal only with cause and effect relationships. Students may also have difficulty understanding the subtleties of language, such as metaphor, and the use of humour, particularly sarcasm. All of these difficulties may be exacerbated by stress and overly stimulating/disorganized settings.

Challenge to Student	Strategies
Reasoning	Provide concrete examples. Check for understanding. Allow the student to DO the task where possible. Teach reasoning overtly through talking aloud, modelling, and rehearsal. Be direct. Reduce stress in learning situations. Set up opportunities for learning to be reinforced at home.

Problem-solving

Difficulties in problem-solving can apply in both the academic and social realms. Just as a student will have difficulty considering information within the context of school work to come up with a correct response, so too will they have difficulty reading and interpreting social situations and dilemmas.

Challenge to Student	Strategies
Problem-solving	Use step-by-step problem-solving methods. Provide frequent feedback. Model problem-solving explicitly (talk through). Assist students in generating solutions Keep instructions clear and explicit. Provide opportunities for problem-solving at an appropriate level. Assess student work to find sources of problem solving

errors and teach skills appropriate to compensate.

Initiation

In many ways �failure to initiate� can be one of the most frustrating characteristics of a student with ABI. While a student can often verbalize what s/he will or should do, s/he lacks the ability to get started. The lack of action persists and, over time, can be identified as a purposeful unwillingness or laziness on the part of the student. It is essential to remember that failure to initiate is a characteristic of the injury and not purposeful behaviour.

Challenge to Student	Strategies
Initiation	Utilize cueing systems (verbal or nonverbal) to get the student started by prompting the student with a first step (e.g., "pick up your pencil and begin writing") or by gently physically indicating a need to change physical action (e.g., a gentle prod in the shoulder; may need to lead the student to the next location of activity). Incorporate peer support as an assistive cue and to establish the routine or procedure for task achievement. Assist student in developing self-monitoring techniques (e.g., schedules, journal of activities to assess task completion). Assist in initiating written work by taking the pencil and asking the student for verbal answers while the teacher or peer acts as a scribe. When the student is involved in the project, give him or her the pencil.

4.9 - Behavioural/ Emotional Impairments

Students who have experienced an ABI are often left with behavioural/emotional impairments. These impairments can vary in nature and severity relative to the part of the brain that is injured and the amount of damage that has occurred. Students who are left with behavioural/emotional impairments will likely require special strategies to help them compensate for their difficulties. Areas of difficulty may include:

Frustration
Disinhibition
Aggression
Depression
Initiation
Poor self-image
Poor social behaviour

4.10 - Behavioural/ Emotional Skills and Strategies

Frustration

Tasks that previously provided little challenge to a student pre-injury may, after sustaining an ABI, prove very difficult. While frustration with mobility and speech may be obvious, a student will also experience frustrations with his/her inability to do such things as acquire new information in a learning environment, maintain preexisting friendships, and in general keep up with the demands of school.

Challenge to Student	Strategies
Frustration	Provide structure in terms of the setting and routine in the programming. The more a child can predict and expect,

the less he will be frustrated, even by things which are difficult.

Monitor new learning based on post-injury information, not learning patterns prior to injury.

Identify antecedents to frustration. What are the specific tasks or things that are difficult or challenging to the student?

Allow opportunities for success. Alternate difficult tasks with easier and/or favourite ones.

Chunk work into smaller, manageable parts. Provide peer support, particularly on tasks that an individual finds difficult and another finds easier.

Monitor work closely and provide feedback. Provide alternatives for acting out (e.g., a quiet place or activity to go to when frustrated).

Help the student to recognize the warning signs of frustration (e.g., feeling flushed, rushed, tense, confused). Provide opportunities for open, safe communication (e.g., when the students can voice their frustration and how they can voice their frustrations, what words to use). Know when it is time to take a break and do something different.

Disinhibition

The ability to control one so behaviour and make appropriate choices is crucial in a school environment. This is particularly true when attempting to fit in and/or maintain preexisting relationships. Students who have difficulty with disinhibition may have trouble following rules (social and academic), act impulsively and irresponsibly, as well as display inappropriate behaviour such as being sexually overt.

Challenge to Student	Strategies
Disinhibition	Provide opportunities for open, safe communication. Provide physical cues (e.g., "stop" hand signal) for feedback to student. Practice cue-on-cue turn-taking, increasing time delay between turns. Where appropriate, debrief or prepare ahead of time with peers or individual. Teach techniques for self-monitoring. Structure situations to allow for positive interaction in a supportive environment where the student can be monitored. As is possible, decrease the number of possible antecedents (number of unsupervised multipletask demands). Make staff aware of student and how to respond appropriately. Role-model appropriate behaviour (e.g., involve the student in various roles, the giver and receiver of information). Teach explicitly social behaviour (e.g. make it clear what is expected, what is acceptable, and how to meet these demands). Where possible, practice ahead of time for new interactive situations. Try to contexualize the learning experience (e.g., when possible, practice the behaviour and the learning in the same setting where the behaviour is expected).

Aggression

Students with aggressive behaviours can pose a difficult challenge for school staff. The use of aggressive language, physical threats, and assault are dealt with very seriously in the school system. When a student with ABI exhibits such behaviours, the dilemma of how to respond becomes more complex. It may often be the case that a student with ABI, depending on the injury and the situation at hand, has a great deal of difficulty controlling these types of behaviours. Always the best solution is prevention.

Challenge to Student	Strategies
Aggression	Always monitor any potentially aggressive situation with the safety of the student and others as a priority. Look for "signals," increased volume in exchange of words, picking up objects, etc. Assist student in developing self-monitoring techniques (e.g., moving to a safe place, going for a walk/gym when angry). Utilize redirection by directing the child to another task or an errand. Debrief when the student is calm and able to listen/attend. Be conscious of body language and tone when dealing with an agitated student. "Calm is strength." Use positive role modelling by maintaining control of your volume, demeanour, tension. The student will adopt your calmness or your escalation. Use proximity control. Identify and eliminate/modify triggers (e.g., typically any form of overstimulation, noise, light, colour, number of elements in the environment, tone). Be prepared. Have a plan in place as an educator and for staff to deal with instances of aggression.

Depression

While students may have memory problems, they do not generally forget who they wanted to be before the injury. Dealing with the redefinition of one so goals, relationships, and orientation in a learning and social environment can result in feelings of hopelessness and depression.

Challenge to Student	Strategies
Depression	Work with the students to recognize what they can do, not what they cannot. Focus on changing emotions, not denying them. Be observant of symptoms of depression such as withdrawal, change in demeanour, lethargy, lack of interest in appearance, withdrawal from others, verbalizing feelings of hopelessness. Keep in contact with the family and, where appropriate, a professional such as a psychologist, in particular when/if a student expresses thoughts of suicide.

Initiation

Failure to initiate can also be observed behaviourally in a student still failure to act or respond appropriately in social situations. While a student can verbalize what s/he will or should do, s/he lacks the ability to get started and will not reliably be able to follow through with his/her apparent commitment (e.g., to apologize to another student). It is essential to remember that failure to initiate is a characteristic of the injury and not purposeful behaviour.

Challenge to Student	Strategies
Initiation	Structure, consistency, and predictable routine.

Utilize <u>cueing</u> systems (verbal or nonverbal) to get the student started.

Incorporate peer support as an assistive cue and to establish the routine or procedure for task achievement. Set goals with the student recognizing and emphasizing what they would like to be able to do (e.g., use motivation if or when possible).

Monitor student closely and provide encouragement and support.

Assist students in developing self-monitoring techniques (e.g., listen to themselves, watch other people's nonverbal behaviours, listen to how others respond to them).

Give the student a choice of doing something (task A) or something else (task B), never something or nothing.

Poor self-image

Students who have sustained an ABI may, in the process of redefining themselves as a learner and a peer compare and judge their worth based on the abilities they possessed before the injury. This comparison can lead to frustration, depression, and poor self-image.

Challenge to Student	Strategies
Poor self-image	Focus on what the student CAN do Never compare current learning or behaviour to student sability prior to the injury. Where appropriate, discuss situation with student speers and allow the peers to assist in plans to enhance self-image. Set up a circle of friends, persons that will specifically interact with the student in specific ways (e.g., walk to school, help with homework, buddy in class). Provide achievable and successful academic goals. Do not set the stage for failure on a repetitive basis. Assist the student in recognizing limitations and finding method to compensate for them.

Poor social behaviour

Students with ABI may often show a lack of sensitivity to the feelings and needs of others. Similarly, they may not read the nonverbal signals of others and may respond inappropriately. Initiating and maintaining friendships can be difficult. Students may lose their ability to feel guilt and empathy. They may behave in impulsive manners that demonstrate poor pragmatics during interchanges with others. By doing so, they may not wait for sufficient information from others and then misperceive the message.

Challenge to Student	Strategies
Poor social behaviour	Allow the students to work with someone they trust to debrief and prepare them for varying social interactions. Enlist peer and family support. Explicitly teach social behaviours such as greeting, showing interest, and respecting personal space. Be direct and specific, but nonjudgmental, about what has occurred. Set social goals with the student and work together to make plans to accomplish them. Role-model and role-play appropriate social behaviour, providing the student with acceptable alternative ways to achieve his/her goal (e.g., attention, fun, etc.).

4.11 - Physical Impairments

Headaches

Students who have experienced neural injury often experience severe head pain or ache with intensities not unlike a migraine. Any head pain will be disruptive and distracting to any thinking and/or physical endurance required within the classroom.

Challenge to Student	Strategies
Cluster headaches / Tension headaches	Keep a log of pain incidents to provide information to parents and team members for planning of when certain activities should be scheduled and when a "rest" is more appropriate. Allow the student to leave the room and go to a comfortable place to lay down in darkness. Use an intermittent teaching schedule, when possible, to avoid headache onset/exacerbation.

Tinnitus

Students with trauma-based head injury or who are on a certain prolonged use of medications (e.g., aspirin) will experience a disturbing and very irritating and debilitating constant white noise in one or both ear(s). This can be very upsetting, �drive [one] crazy� and competes with any classroom information.

Challenge to Student	Strategies
<u>Tinnitus</u>	Check that the student is paying attention. The tinnitus can often mask other incoming information. Ask student to repeat instructions. Provide preferential seating. Utilize other modalities (e.g., provide written, pictorial, as well as verbal instruction). Invite the student to repeat a phrase to him/herself until the tinnitus is no longer disabling; white noise, music often can mask the tinnitus experience, especially when it is particularly aggravated.

Visual field neglect

Occasionally, a student will not respond to information on one side of his/her body and/or spatial surrounding. This results in arrested information input.

Challenge to Student	Strategies
Visual field neglect	Provide large print. Utilize other modalities (e.g., audition [sound], somatosensation [touch] to bring attention to the neglected side). Provide visual cues to the neglected side (e.g., arrows for direction, colour-coding, dark red line down the left side of the page). Control lighting in the classroom; the more noticable any aspect of the spatial classroom, the better. Provide preferential seating.

Cognitive fatigue

Students with ABI may become easily fatigued when faced with lengthy or complex cognitive tasks. Students may compain of being overwhelmed or be unable to focus.

Challenge to Student	Strategies
Cognitive fatigue	Allow student to rest; some may require 90-120 minutes sleep time (preferably between 1:00 - 3:00 p.m.), others may need changes within the curriculum, alternating 30-minute rests with 30-minute tasks. Chunk (group semantically) work and ideas. Consider shortening the day and/or lesson where appropriate. Provide frequent breaks. Monitor student s progress and look for plateaus and frustration points in learning. Do not overwhelm the student with amount of information, or certain sameness of information; allow variety and change.

Physical Fatigue

Students who have sustained an ABI may be less able to sustain an appropriate amount of physical energy to participate fully in an average school day. They may require frequent breaks and a quiet, private place to rest as a result of the ABI.

Challenge to Student	Strategies
Physical Fatigue	Provide comfortable place for student to rest. Provide frequent breaks (e.g., pacing, 5-minute breaks). Monitor student s attention level. Consider shortening school day where appropriate.

Seizures

For some students an ABI may result in seizure activity. For these students, their ability to cope with these seizures will require that an educator be sensitive and knowledgeable with regard to handling the effects of both the seizure itself and the possible implications of medications used to address those seizures.

Challenge to Student	Strategies
Seizures	Monitor and log seizure activity, frequency/severity. Be aware of possible side effects of seizure medication (e.g. �burning� smell, nausea, lethargy); varies between medication type. Educate staff about seizure procedures (especially where there is a muscular component to the seizure). Obtain permission of parent/pupil before discussing with class.

Self-care

The ability to care for one self involves a set of skills that are often affected by the injury. Students with ABI may appear unkempt, unorganized, and may have body odour.

Challenge to Student	Strategies
Self-care	Have extra clothing on hand in case of incontinence. Be aware of changes in hygiene. Provide a place and resources that allow the child an opportunity to "clean up." Introduce management behaviours (e.g., cued washroom breaks). Provide assistance for difficult tasks such as buttoning and combing. Monitor response to medication by maintaining a log. Be sure to be well informed about possible side effects such as fatigue and attention problems.

Mobility

Students with ABI often have mobility problems. Accessing classrooms, washrooms, cafeteria, and upper levels of the school may be problematic. Students with balance problems may require assistance with changes in position and travel to new settings. Students often require more time to travel between tasks/settings.

Challenge to Student	Strategies
Mobility	Provide support in seating. Make classroom accessible. Provide adaptive equipment such as a tape recorder. Monitor safety in crowded unstructured setting. Consult with team to provide supported physical education program during gym class.

Fine Motor

The use of fine motor skills are a crucial part of classroom activity. Students with ABI frequently experience impairments in fine motor skills, therefore, may submit messy or incomplete work, have trouble with completing work on time, and experience difficulty engaging in some classroom tasks.

Challenge to Student	Strategies
Fine Motor	Allow student to use computer. Chunk work into manageable pieces. Reduce expectation for written work. Provide a scribe. Allow student to report verbally. Utilize a tape recorder. Provide time extensions where needed.

4.12 - General Skills and Strategies

Strategies for the School/ Classroom Setting

Be sensitive to partnering students with peers for collaborative work. Provide face-saving strategies such as prepping the student ahead of time for reading

assignments, unobtrusively modifying work, using nonverbal strategies where possible. Keep lines of communication open both with the student and with the family.

Monitor mood and behaviour changes. Try to discern triggers, stresses, and other antecedent

events that may be causing those changes.

Provide opportunity for the student to excel in areas of strength.

Discuss with the student and the family the possibility of orienting the students in the class to what implications an acquired brain injury might have for their friends and their relationship with their family (to be reviewed on a case-by-case basis).

Strategies for Specific Subject Areas

Challenge to Student	Strategies
Math	Focus on what the student can accomplish, not what s/he can't. Use concrete items to demonstrate mathematical concepts. Allow student to use manipulative items to solve math problems. Create real world functional scenarios for students to practice mathematical concepts (e.g. create and plan a budget, shopping for small items at a local store). Allow student to use a calculator to solve multi-step problems. Reduce the workload. Practice word problems with pictures or stories that are personally relevant to the student. On math sheets with multiple problems, cut out a window from a piece of paper and place over the sheet so that only one problem is visible at a time.

Challenge to Student	Strategies
Writing	Provide alternative response methods for student such as having another student record verbal answers or take notes. Allow for exams to be taken orally so student is not penalized for motor inefficiencies. Allow student to use a computer to record responses and complete assignments.

Challenge to Student	Strategies
Reading	Use a ruler as a line marker to keep place while reading. Go over key vocabulary words prior to reading material. Highlight the key words with a highlighter. Go over a list of key questions with the student before reading that highlight the main concepts of the material. Ask student to summarize larger reading passages into smaller segments. Give student an outline to fill in while s/he is reading.

Strategies for the Playground

Allow opportunities for practice in social situations.

Prepare student for transitions from one physical environment to another.

Provide structured play situations.

Pair student with another student to assist with navigation around the school environment and through activities.

Adjust expectations to allow for physical disabilities (e.g., fatigue, problems with balance, etc.). Keep staff informed and provide extra supervision and support when required.

Encourage parents to help support and maintain social relationships outside of school settings. Allow a safe, low stimulation place for student to go if he/she becomes frustrated, overstimulated, and/or angry.

Allow for constructive peer feedback.

Observe student's social interactions and provide feedback accordingly.

Strategies for Getting Around the School

Problem	Strategies
Locating and identifying a locker	Allow the student to personalize the locker with a sticker or other identifying markings. Locate the locker at the beginning or end of a row for easy identification.
Remembering the locker combination	Use a lock that has a key instead of a combination. Have the student write the combination in an organizer or something that s/he always carrys. Make sure a trusted friend and/or teacher knows the combination.
Carrying books	Use a knapsack or a backpack on wheels. Keep a copy of the textbook in each class and another copy at home so they do not have to be carried at all. Keep all the notes for the day in one binder.
Locating a classroom	Use a buddy system. Teach the student to use the same route every day. Give the student a map of the school that utilizes landmarks for direction (e.g., turn right at the trophy display case).
Maneuvering in the halls	Have the student leave class a few minutes early if the have problems moving in crowded halls or require extra time to get to class on time. Schedule classes geographically close together.