Teaching Students with Epilepsy: Strategies for Educators

Children with epilepsy often experience learning issues as a result of their seizures. These may include ongoing problems with motor skills or cognitive functions, as well as difficulty in acquiring new skills or knowledge due to a vulnerable working memory that results from the seizure disorder. The fact that epilepsy is associated with such wide-ranging learning problems makes it critical that children with epilepsy have the appropriate supports at school in order to realize their potential.

When children are exposed to new concepts, they go through four stages of learning. First they acquire the new concept, and then they store it in their memory. Later, they must retrieve this information and then apply it to a new situation. For most children this process is seamless -- they are hardly aware of the individual steps. For students with epilepsy, however, certain stages can pose a tremendous challenge. First, the disturbances in their brain that result from seizures make it difficult for students to focus their attention and thus acquire new information. Seizures can also compromise their working memory, making it difficult for them to store and retrieve any information that they were able to learn. And because many learning activities are based on retrieval tasks — for example, defining words, remembering historical dates and events, and identifying and describing key characters in a story — students with epilepsy are often unable to apply learned information and thus fail to keep up with their classmates.

The key to helping students with epilepsy reach their full potential in school and beyond is to provide them with opportunities that take into account their range of learning problems, including difficulties with speech and language, attention, and memory. The strategies that follow are intended to help teachers and specialists create these new opportunities for learning and can be incorporated into an existing curriculum. You may find that some of the strategies diverge from your typical approach, while others fit in with the accommodations you are already making for the range of students in your class. The suggestions are intended as part of an overall education program for a child with epilepsy, and can be adjusted by each child's education team based on his or her specific needs.

Early intervention is also critical for children with epilepsy. Learning basic concepts and acquiring good learning habits when young paves the way for successful future learning. Many of the suggestions provided here are best used with younger students, particularly those in preschool and kindergarten. However, students in middle and high school may benefit from some of the suggested strategies, particularly if they have been using similar strategies in the past.

Strategy 1: Curriculum Adaptation

To help students with epilepsy bypass a vulnerable working memory, teachers can adapt some of their activities to focus less on retrieval of information and more on recognition tasks. In other words, students with memory problems can show their understanding of a concept by responding to questions or prompts that use the information they know. The following are some examples of ways to adapt traditional memory-recall activities to focus more on recognition:

Example 1: Language Arts

- Use a graphic organizer, such as a web, to display the characters, plot, themes, and settings in a novel. Ask the student to fill in information as it's being read, or have the student read while you log the information.
- Have the student use index cards to make a timeline of key events in a story. Later, the student can use the index cards as triggers for recounting the plot.
- Have the student illustrate the character traits of major characters on index cards. The cards can be used later to help the student recall the traits and analyze the characters.
- Have the student choose symbols to depict key events in the story. For example, a pond with a magic wand over it can symbolize the power of living forever.
- All of the above materials can later be made available to the student when he or she is asked to analyze the story or to think critically.

Example 2: Mathematics

- Eliminate the need for information retrieval when teaching new concepts by providing the student with the facts and formulas he or she needs to learn the concept. Also, allow the use of a calculator to facilitate problem solving when introducing a new concept.
- Make use of number lines and other visual references to help during problem solving.
- Create or help the student create a journal containing basic math operations that pertain to whole numbers and fractions. Encourage the student to reference the journal when applying learned concepts to new problems, particularly when he or she is having difficulty remembering a process.

Example 3: General Concept Building

- Create categories that allow for more efficient storage and retrieval of new information. The names of many individual items can be stored and retrieved as part of a larger set. For example, younger students can use categories such as animals and colors to sort information, then look at the connections between categories (e.g., a canary is a bird that is yellow). For older students, a history lesson about Christopher Columbus can introduce the category of "Explorers." The student can reference pictures of explorers, create a web of the explorers' physical characteristics and personality traits, chart their contribution to exploration, and then make a connection to the present day: Who is an explorer that lives today? Later, if the student has difficulty defining the term explorer in its original context, he or she can work backwards to access that information.

Strategy 2: Thematic Teaching

Another strategy for helping students with epilepsy learn and retain a new concept or skill is to expose them to the new information as often as possible. Thematic teaching engages students in learning the same concepts and skills many times throughout the day. A typical day may include regular classroom instruction, individual tutorials, home reinforcement, and interventions such as speech, physical, and occupational therapies -- all of which touch upon some of the same topics. At the very least, the student has several opportunities to receive the information when he or she isn't overly tired or experiencing a seizure, thereby increasing the likelihood that the information will be learned. When the student is feeling physically well, then the multiple approaches provide him or her with different ways of seeing the same concept and, thus, reinforce the learning. The following are some examples of thematic teaching:

Sample curriculum concept for a young child: *Full*

The student learns what *full* means in different scenarios. At home, she is told that her cup is full of juice. *Full* is used during a song in class, with the teacher highlighting the term for the student. During his or her individual tutorial, the student practices putting beads into a cup until it is full; during speech and language therapy, the student might identify pictures that illustrate *full*. In addition to learning the meaning of the concept, the student also learns how to generalize. In other words, he or she understands that the same word — *full* — applies to many situations.

Function theme

The student's thematic lessons focus on the functions of objects in his or her world. For example, the student learns that a phone is for talking into and clothes are for wearing. His or her parents can reinforce these concepts during the family's usual morning and evening routines. In the classroom, the teacher can reinforce the idea of function during the rules of a game. ("You're the duck, so you need to sit." Or, "You're the leader, so what do you do?") During one-on-one tutorials or therapy, the student can use manipulatives to show an object's function, such as showing that a pencil is for writing.

Teddy bear theme

The student's teddy bear or doll can be used as a stand-in for the student to talk about his or her routine. During class or in a tutorial, the student can show what the teddy bear does from the moment it gets up — brushes its teeth, uses the bathroom, gets dressed, etc. — until the end of the day. At home, parents can ask the student what the teddy bear would do next while going through the routine, both to help the student become more adept at his or her own routine as well as to practice communication skills.

In order to use the thematic teaching approach, it is important to have good communication between everyone on the student's team. This can include parents, doctors, and various specialists. Themes must be planned ahead of time so that parents and specialists can teach the concepts at the same time that they appear in the classroom curriculum. The team should also periodically check on the student's progress to make sure that he or she is internalizing the new concepts and to see if changes to the plan are needed.

Strategy 3: Tutorial*

Another method for teaching children with epilepsy is individual instruction. As you have seen, one-on-one tutorials can support the regular curriculum by addressing the same themes and topics multiple times. However, tutorials can also provide the student with a more focused look at new concepts, as well as practice at the process of learning.

Tutorials are typically taught by a specialist and take place in a quiet part of the general classroom where there are few distractions. The time set aside for a tutorial depends on the student's needs and attention span. Typically, each tutorial will last about 30 minutes and include one fun activity in the middle to allow for rest and regrouping. During a tutorial, the student receives a token as a reward for successfully completing each activity. The token can be a sticker or plastic marker that represents time allowed for an activity that the student likes, such as block building. Consistent use of such rewards reinforces the student's behavior and encourages him or her to keep learning.

The number of tutorial sessions per day or week depends on how much new learning and/or reinforcement of known concepts the student needs. The ultimate goal is for the student to be part of the larger classroom group as much as possible, so that the number of tutorials can be reduced gradually as the need for them diminishes.

The following is a sample tutorial. It can be adjusted to fit the unique needs of each student by the student's support team. The target age group for this example is preschool and kindergarten.

Step 1: Preparing for a Tutorial

In order for children to learn something new, they must focus their attention on the lesson at hand. For a student with learning issues, this skill must be fostered over time in much the same way that other skills are taught. The student must have a set routine that signals the transition between play time (informal activity) and the tutorial (formal learning activity) and orients him or her to the new learning activity.

Begin by using verbal cues to signal the beginning of the transition. For example, tell the student that he or she has "one more minute of play time." When you use the verbal cues consistently, the student begins to associate them with the initiation of the tutorial. Use hand gestures to reinforce the verbal cues. For example, raise your index finger to signify "one" when telling the student he or she has one more minute of play time. Over time, the student can be expected to respond to the cues by leaving the play area, walking to the quiet area set aside for his tutorial, sitting down in his or her seat, and waiting for directions.

The key is to encourage the student to come to the task and experience the change from one activity to the other. This helps the student learn that what he or she is about to do is different from other parts of the day and that he or she should pay special attention to and store what will be taught. This awareness will develop over time. The more actively the student participates in preparing for and engaging in the learning activity, the more likely it will be that he or she encodes the information solidly enough to store, recognize, and, more importantly, generalize in a new environment.

Step 2: Developing Language Skills

Effective learning depends on good communication. However, children with epilepsy who develop speech and language problems often have difficulty with receptive language — the ability to recognize speech sounds, or understanding what is being said. Some children may also have difficulty with expressive language, or the ability to express their own ideas or speak clearly.

Because language comprehension depends on a student's ability to understand the meaning of individual words, it is important to develop and then enhance basic word meaning. Action words such as *run, walk, sit, sleep, eat,* and *drink* may offer a good starting point. Nouns such as *cup, blanket,* and *car* are also good because they exist in the student's natural environment. Basic verbal communication can also develop at a faster pace once the student can group two or more single words to convey a thought. Whenever possible, teach the sign of the word to accompany the verbal presentation.

Another approach is to help the student begin to associate familiar items with their names, and eventually their functions. For example, the student can bring in photographs of objects that exist in his or her home environment, such as a favorite cup, blanket, teddy bear, or toothbrush, as well as the

actual objects themselves. You can then begin to systematically show the object and its photograph together. Once the student begins to demonstrate an association between the object and its photograph, either verbally or by signing, you can begin to bridge the student from the photograph to a generic picture of the same item. It may take some time and repetition for the student to realize that a familiar object can exist in many different colors, shapes, sizes, and designs.

Once the student has generalized basic words, you can begin to introduce other basic language concepts, such as *more, full, small, large, over, under,* and *between*. Over time, you can even introduce abstract words such as *hurt* and *finish,* and encourage the student to begin to process short phrases and short sentences.

Step 3: Developing Motor Skills

Some students also struggle with motor skills as a result of their epilepsy. These students can benefit from tutorials that include the use of manipulatives and nonverbal stimuli. This can be particularly useful when the student is making observations, determining basic cause-effect relationships, and problem solving. For example, the student could be provided with a model of a block tower and asked to build one like it. Puzzles are also good activities for students working on their motor skills.

Language development can be simultaneously reinforced during motor skill building activities. For example, when a student engages in block building, the teacher can ask him or her to start with a *blue* block or a *small* block. Also, gross motor activities such as pushing a truck or sweeping can be paired with a function (e.g., cleaning up). Coloring and sequencing by shape and color are other examples of nonverbal activities. As is the case with language, the list of activities can expand over time and be adjusted according to the student's concept development, command of language, and, most importantly, communication skills.