Case Study on Assistive Technology: Voices from the Field

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Meet Joshua: Why are we concerned about this student? The following case study is about a young child named Joshua. The purpose of this case study is to apply processes for considering and implementing assistive technology developed at the Center for Technology in Education at the Johns Hopkins University.

Joshua is a 6 year 2 month old child in kindergarten at a public separate day school for students with multiple disabilities. Joshua currently has a diagnosis of developmental delay and is undergoing informal and formal assessments for his upcoming annual review. He demonstrates delays in his cognition, language, communication, and social skills and has Individualized Education Program Plan (IEP) goals for academics, behavior, expressive and receptive language, sensory regulation, and fine motor development. Joshua uses a Springboard Lite voice output device, picture symbols, gestures, and verbal approximations for communication. Joshua attends the Augmentative and Alternative Communication class (AAC) with a total of 7 students, 1 teacher,
Joshua is a happy boy who enjoys coming to school and saying hello to peers and adults. Joshua likes routine tasks like unpacking, doing his morning work, and choosing his lunch for the day. Joshua will often find the different icons in his device to talk about what he has done. Throughout the year, Joshua has taken ownership of his device and can locate icons and categories. Joshua spontaneously comments on things happening around him – for example, if a peer is laughing he will use the device to say “Alex feel silly.” Joshua easily navigates the voice output system but will frequently hit buttons repeatedly in a non-communicative fashion, like hitting “pizza” multiple times in a row or touching all the letters of the alphabet. When this occurs, Joshua is typically sitting alone or at the table during large group instruction. If he is alone, Joshua is encouraged to use his words and device to talk with other adults and peers. If he is in a large group, Joshua is redirected using a token reward system but sometimes responds aggressively if he is shown a picture symbol for “quiet talker” or told to wait his turn.

Joshua has a history of self-injurious behavior, aggression, and impulsivity. Joshua uses a personalized picture schedule to follow the school routine. He also uses several individualized visual supports, for example a “To Do/ Done” chart in which tasks are broken down into steps and a “First/Next/Last” chart with pictures of adults and work tables for small group transitions within the classroom. These visual tools were created to help Joshua adjust to the school routine, become more independent, and decrease the amount of adult prompting needed. Joshua often reacts to adult demands (for example, to move his chair to a specific table), with resistance by refusing to comply, hitting his face or arm with an open fist, or banging his head or hand into the nearest object or person. When this occurs, Joseph will cry and say “ow,” and inconsistently follows through with the request.

Additionally, Joshua has a difficult time taking turns during structured play or academic instruction. He will jump out of his seat and/or call out answers using words or his device. Joshua has a hard time remaining in the group area and will frequently leave the work table to sit under another table, grab a truck from the play area, or sit in a different seat. Joshua has trouble
controlling his impulses and will yell “go” and engage in self-injurious behavior or aggression if a student is taking a long time to answer a question or complete a task. It is challenging for Joshua to transition within the school building. He is resistant to come in from recess, leave or go to the lunch room, and wait in line. Joshua walks in the hallway safely with reminders but will aggress if people are in his path or walk close to him.

Joshua needs to be able to communicate with peers and adults. It is essential that Joshua use a variety of assistive technology tools to communicate his need for a turn or a break from the group. Joshua needs time to explore his device and opportunities to practice what he has learned. He needs instruction on appropriate phrases that he can use to talk about how he is feeling or what is happening around him. Joshua needs more visual supports to prepare him for transitions and teach him expectations for specific situations.

Consider and Trial AT

Goals: Where are we going?
At Joshua’s most recent meeting with parents, teachers, and specialists, all parties agreed that Joshua’s self-injurious behavior and aggression were problematic at home and school. The IEP team – using frequency data on aggressive and self-injurious behaviors – is concerned about how Joshua’s behaviors impact his social development and personal school readiness skills. Joshua has goals to walk safely in the hallway, transition without aggression and noncompliance, and engage in turn taking and sharing materials with classmates. Joshua’s speech goals include communicating feelings and needs and he has a motor development goal for regulating his body by requesting sensory breaks or materials.

Strategies and Tools: How do we get there?

The IEP team concurred that Joshua would benefit from social stories that prepared him for transitions and specific school routines, for example walking in the hall, working in a group at the table and raising hands, using words and having quiet hands, and asking for a break, turn, or more of something. The speech language pathologist and occupational therapist proposed that communication boards with picture symbols of sensory materials (fidgets,
beanbags, wheelbarrow walks, swings, etc.) be placed around the room so Joshua can appropriately request breaks and keep his body regulated. The team agreed that Joshua responds well to a token economy, which will continue to be used to reinforce the desirable behaviors. The parents noted that Joshua is using his device with more independence and recommended it be incorporated into a plan to decrease Joshua’s unsafe behaviors and improve his communication. The team agreed to plan a “Phrase of the Week” which will focus on teaching Joshua coping phrases so he can communicate his feelings and needs as well as appropriately comment on what is happening around him.

Implement AT: What needs to happen so that the tools and strategies are used effectively?
The school decided that the speech-language pathologist and special educator will work together to write and implement social stories for Joshua. The social stories will be introduced to the class by the teacher and copies will be sent home to the parents to reinforce the expectations at home. The classroom teacher will teach the following phrases using the core page of the device: Your (or student’s name) turn, my turn/want turn, stop work/want stop, I feel sad/mad, and please wait. The phrases will be taught using direct instruction with the device, Prentke-Romnich PASS Software to model icon sequences and location, and the interactive Promethean Board to model and practice phrases so Joshua can become more automatic with each phrase. Over the course of a month, the special educator, speech language pathologist, occupational therapist, para educators, and parents will model the phrases, encourage Joshua to use these phrases, and create opportunities for Joshua to practice these phrases in a natural environment. Data will be taken on the frequency of Joshua’s appropriate use of the phrases (using his words or the voice output device), including prompted and spontaneous use. Additional frequency data will be taken on the number of self-injurious and aggressive behaviors. The IEP team will meet in one month to discuss the results of data and the next steps for Joshua’s safety and communication.

Monitor Progress

How do we know we are on track?

Following the one month plan, the IEP team was conflicted about Joshua’s
progress. Data showed a steady decrease in Joshua's noncompliance and self-injurious behavior. It also showed a slight increase the first week and then steady rate of aggression throughout the month. Communication data showed use of the phrases with prompts approximately 25% over baseline for the first week after instruction and then a steady increase in spontaneous use of the phrases as the month progressed. Joshua consistently asks for a turn, tells friends when it is their turn, and asks to stop when he needs a break. Joshua applies the phrases to different settings, using them in physical education class, the classroom, and the lunch room, and uses them with a variety of adults and peers. Joshua sometimes pairs the phrases with an act of self-injurious behavior or aggression, which occurs more frequently when transitioning into the classroom from the bus, leaving the playground, or going home in the car with his parents.

The IEP team is happy that Joshua learns and applies language to a variety of settings within the school setting. The team will continue to work with Joshua to teach him new phrases that he can use in social situations both at school, home, and within the community. The IEP team feels that while Joshua demonstrates progress in his expressive language by using the phrases, his impulsivity and self-control contribute to his dangerous behaviors.

Implications

Joshua's IEP team was able to make decisions about how to teach specific phrases using an assistive technology device to improve his overall communication with peers and adults to support Joshua's mastery of his IEP goals for personal and social development, expressive language, and self-regulation. The IEP team used a step-by-step process modeled after the AT Cycle of Consider, Choose and Trial, and Implement and Monitor to help come up with a plan for Joshua's safety and increased communication. Based on the results of Joshua's progress, the IEP team will continue to take data on Joshua's behaviors as well as his communication frequency and will meet again to implement additional phrases and safety protocols.