Case Study:
Teaching Words as Symbols for Students with Autism
A Learning Progression from Pictures to Word Prediction, an Assistive Technology Tool

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CO:Writer®

Daniel McNulty, NE Coordinator for the Indiana PATINS Project
(Promoting Achievement through Technology and Instruction for All Students)

QUOTES

"*After one semester, all the pictures were gone and in their place were words. Students recognized the words and their meaning. What a breakthrough!*"

Daniel McNulty

Daniel McNulty is the Northeast Coordinator for the Indiana PATINS Project. This statewide assistive technology and Universal Design for Learning (UDL) program works to improve access to general curriculum materials and to move toward a UDL educational environment within the Indiana public school system.

Throughout his vocation, Daniel has learned firsthand the challenges of teaching children with disabilities and particularly those with autism. He worked as a paraprofessional, then a behavioral consultant and therapist in private practice. His teaching career began with young children with autism spectrum disorders. He took what he learned in his clinical practice into his classroom for his first teaching assignment with K-6 graders in a small rural public school.

This rural school had few computers and fewer teachers who used computers. Some teachers deemed Daniel's class of students a big challenge. They told Daniel that these students would likely never become readers or writers. They suggested that Daniel teach communication with pictures and not much more. They said that pictures were the only way to teach students with severe disabilities because they could not phonetically decode words or recognize letters. Daniel had other plans for his students and what he accomplished was more than anyone anticipated.

"Words are symbols," said Daniel. "I knew from past experience that these students were capable of reading and of expressing themselves in written form. I kept thinking, how can I get them to recognize that a word is a symbol? I wondered how to help my students make connections from words as symbols to the written word."

Keeping Students on Task

In Daniel's class, routine was very important. Students with cognitive, social and learning disabilities like to be organized, so Daniel created a giant wall-sized tempo-loop board and each student had a column representing their school day. Every 15 minutes a student's schedule held a picture symbol indicating the next activity. Students would pull off each item as their task was done.

TUESDAY:						
TIME	Peter	Jessica	Allen	John	April	Sean
8:00-8:15	Homeroom	Homeroom	Homeroom	Homeroom	Homeroom	Homeroom
8:15-8:30	Com./Story	Com./Story	Spelling	Spelling	Spelling	Ameneo. Crew
8:30-8:45	Spelling	Cr. Writing	Journal	Laundry	Math	8:30 GAP
8:45-9:00	Cr. Writing	Geometry	8:45 ART	Phonics	Cr. Writing	8:45 ART
9:00-9:15		9:00 OT		Math		
9:15-9:30	Telling Time	TouchMath	9:25 Speech	Email	Laundry	
9:30-9:45	TouchMath	Spelling		9:30 TECH	9:30 TECH	MILK
9:45-10:00	Comprehens	9:45 Speech	Phonics			Comprehens
10:00-10:15		Comprehens.	SightWords			LAB
10:15-10:30	Numbers		Time	Money	Time	
10:30-10:45			Calendar/Literacy Group			
10:45-11:00						10:50
11:00-11:30	11:00 Lunch	11:00Lunch	Group - Creative - Writing			
11:30-12:00	11:50 Story	11:50 Story	11:30 Lunch	11:35 Lunch	11:35 Lunch	11:30Lunch

After one semester, Daniel decided to take a risk and replace each picture in his classroom with a text word. At first, the event seemed confusing for students, but Daniel knew that trying new things often takes time. "After one semester, all the pictures were gone and in their place were words. Students recognized the words and their meaning. What a breakthrough!"

As Daniel added new sight words, he watched his students look at their board in anticipation. This strategy motivated and engaged them. His students knew what activity or task to anticipate next, which also gave them a feeling of accomplishment. Students were not necessarily reading words as some might define the process; they were not phonetically decoding, but they were recognizing the shape of the words or the picture the words formed. These words had become 'sight-words' for Daniel's students.

Creating Independent Learners using Word Prediction

Daniel had 4th, 5th, and 6th graders who had never written more than one or two words on their own. In a given week, students would see 30 to 120 new words (symbols) on their schedule. As students began to recognize that some words started with the same letters, Daniel tried word prediction software to see if students would be receptive to using a computer and seeing the letters, words and symbols on screen. For the first time, some students were writing sentences and paragraphs using word prediction. Skeptical at first, Daniel thought word prediction might be a crutch. More than anything he wanted his students to be independent. What he realized was, that without the word prediction assistive technology tool, many of his students would never have written their first word.

Word prediction changed how Daniel approached instruction materials for students with disabilities. Soon after the introduction of word prediction, he tried an experiment. "I used word prediction for a semester and then took it away," he said. "I found that students had retained some words and knew how to write them. They were not dependent on the technology, but rather were learning to spell."
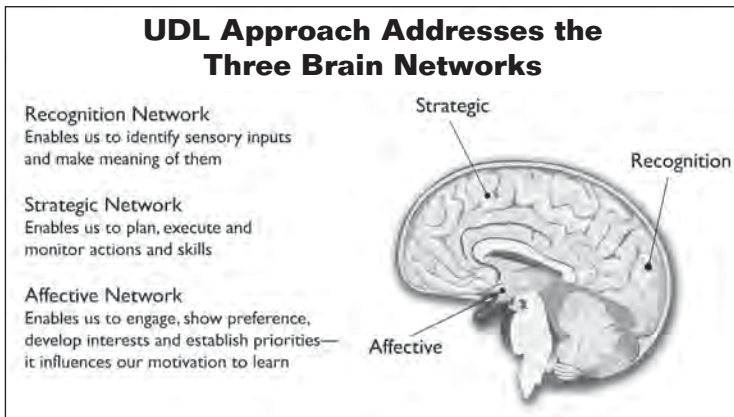
Prior to using word prediction, students who could not spell became frustrated with writing and gave up. Daniel realized that word prediction removed students' frustration associated with spelling. Students now had a tool that allowed them to partially overcome the barrier of spelling in their written content. "The word prediction tool kept my students writing," Daniel said. "They didn't get hung up on spelling. When students can express their thoughts they improve in other areas including behavior, social interactions, and confidence."

Students who had spelling difficulties were exhibiting a new-found expression that increased their ability to participate with their general education peers in meaningful ways. They approached their classes in writing, research, and history with more enthusiasm and involvement. These youngsters behaved differently in social interactions.

Advancing Assistive Technology Use in Schools

Through this experience, teachers in this rural school gradually started to use more technology and advocate for UDL (Universal Design for Learning), where each student benefits from different kinds of learning approaches based on learning styles and individual strengths.

UDL Approach Addresses the Three Brain Networks

Recognition Network
Enables us to identify sensory inputs and make meaning of them

Strategic Network
Enables us to plan, execute and monitor actions and skills

Affective Network
Enables us to engage, show preference, develop interests and establish priorities—it influences our motivation to learn

Strategic

Recognition

Affective

Daniel said, "The coolest thing that happened was that one of my students, Johnny, would demonstrate what he learned on the computer for other general education teachers. I'd pull them aside and ask them to observe Johnny writing on the computer, using interactive whiteboards, podcasting, and blogging tools. Teachers started to call my room and ask for him to come to their room for his help. My students became leaders in the school. They rarely, if ever, experienced being in a leadership role for others."

Daniel believes that taking a risk in his classroom to use words as symbols paid off. He hopes to encourage other teachers to use sight words as symbols and make progress in using assistive technology tools, like word prediction. In the end, Daniel's students achieved higher results than what had been expected. Being open to new approaches is something Daniel will remember throughout his teaching career. This challenge was an all-time home run for Daniels' students with autism, their parents, his teaching colleagues and this rural school.

What Daniel realized was, that without the word prediction assistive technology tool, many students would never have written their first word or sentence.

Our Vision

Empower Students with Accessible Technologies that Address Unique Literacy Needs

It's commonplace in schools to see stacks of textbooks, paper notebooks, pencils and pens. These are the "conventional" learning tools in schools, and they are effective for many students. But for students with physical, cognitive or learning differences, these tools pose significant barriers to learning. These students require **specialized accessible technology** and media to maximize their learning. This is where Don Johnston excels. Since 1980 we have been developing and supplying innovative technologies to schools who recognize that each student has unique learning needs and can thrive in the right environment.

We strive to create the right environment. This requires the right tools, the right implementation and the right instructional approaches. We are committed to providing you with the most value from product selection to ongoing support and implementation.

Don Johnston empowers educators with specialized accessible technologies and supported reading and writing tools for students with cognitive, physical, and learning differences. Since 1980, the company has partnered with literacy experts, assistive technology specialists, speech language pathologists, psychologists, teachers, researchers, and scientists to develop over a dozen assistive technology products. The company also publishes Start-to-Finish®, a collection of paperback, audio and computer books for students who read below grade level.