

KIDSMART SNAPSHOTS



EVANSTON PRESCHOOL Alex's story

Technology a motivational learning tool for
children with special needs



> Background information

Children with autism and other pervasive developmental disorders often exhibit significant difficulties in learning from traditional methods, especially in the area of interpreting, solving social problems and in generating multiple solutions to problems. Schreibman & Ingersoll (2005) have demonstrated through their research, that providing students with autism and other similar developmental disorders with a curriculum program that encompasses a variety of teaching strategies and that includes both highly structured and more naturalistic teaching approaches, has proven results in improving the effectiveness of the education of these young children. Information communication technologies (ICTs) are tools which can be successfully used in these two domains of teaching.

ICT provides a multimedia approach to presenting and communicating information and can be a combination of audio, video, animation, still photos, interactivity and text which, when combined in a software program, can provide diverse and rich means of conveying information. Learning through technology provides all students with multiple exposure and opportunities to practise new concepts, which is a strategy shown to impact on student achievement (Marzano, Pickering, and Pollock, 2001). For students with Autism, the motivation for them to keep practising a concept from traditional teaching methods is often lacking. Computers can often provide the motivation for many students to interact successfully with new knowledge and information.

Research also shows that students are more likely to integrate and retain knowledge when concepts are delivered through both linguistic and nonlinguistic means. When students are engaged in comparing and classifying learned concepts and terminology (Marzano, et al, 2001), which tends to be the basis of many early childhood game designs, e.g. "Little, Middle and Big," a program within Millie's Maths House, where students aim to identify and compare different sized shoes. When a shoe is clicked on, the linguistic classification of "little," "middle" or "big" is spoken and mapped to the non-linguistic picture representation.

> Investigation

As with the proven research, observations from the preschool centres in the IBM KidSmart program also showed a strong correlation between students with autism and a motivation to work with computer technology. The students' interest went beyond just attraction; they tended to be skilled in responding to visual cues such as pictures and animations in association with non-visual instructions. With this special interest in mind, teachers involved in the IBM KidSmart program were able to develop engaging and productive learning programs to introduce and reinforce essential early childhood knowledge and skills for specific students with learning disabilities.

The following is a case study that highlights computer integration as a successful learning tool for a preschooler with developmental difficulties at Evanston Preschool in South Australia in 2006.

> Observations

Alex is a four year old boy. He is inquisitive, witty and playful. Alex also has autism. He, like the other children in the class, wants to explore and understand the world around him, but just differently from his peers.



Alex has a fascination with whales, seals and dolphins. By introducing Alex to the software program, *Sorting Station* from **Sammy's Science House** he was also introduced to the concept of sorting and classifying living and non-living things, including a number of sea creatures. His interest in the computer grew and he became involved in more interactions and learning experiences that originated from the computer software packages. It was quickly observed that the computer had a positive influence on Alex's learning. He was not only motivated to explore ideas, but seemed to be grasping concepts very quickly.

Alex's positive self concept increased as he played the games. He said to himself, "You did it; you did it Alex!" When Alex achieved his goal, he clapped his hands and was proud of himself. Selecting initial programs, that were structured, allowed Alex to explore possible solutions, through trial and error. Through repetition and continual reinforcement of correct responses, he started to develop a sense of personal identity as a capable learner.

The success he achieved through the computer interactions were a catalyst for developing his confidence in using oral language to communicate with others about what he was playing. Through simple interactions Alex expanded and developed his spoken language for a range of purposes, including developing some language strategies to join play and social situations, for example "Do you want to see Andre (the seal)? Let's go see Andre."

Through the development of his literacy and numeracy skills, he was also learning appropriate social skills. He was able to tolerate children sitting in close proximity to him on the special IBM KidSmart bench seat. Other students would ask him questions and offer advice, and he would interact positively with other children; also sharing his ideas and thoughts about the game he was playing.

Possibly the biggest factor influencing Alex's learning was his ability to sustain concentration for long periods of time whilst using the IBM KidSmart computer. His memory was amazing. His perseverance with various software programs provided an opportunity for him to reach specific goals, including finding characters and icons that helped to reinforce words, symbols and simple concepts. Over time Alex quickly demonstrated an increasing independence and self-confidence when managing and negotiating his learning experiences, including being able to appropriately self-select his skill levels by choosing options himself.

The IBM KidSmart computer provides calming, fun and rewarding activities for Alex. He uses fine motor skills and hand/eye coordination, communication skills, cause and effect and problem solving skills to explore and master various software activities.

Overall, having the IBM KidSmart computer at Evanston Preschool Centre has enabled Alex and other children to increase their learning and social interactions.

> Future Directions

All students need individual attention to assess and reinforce their learning, especially students with learning difficulties. ICTs provide a tool to help students get the practice and feedback that they need, not only in literacy, but in mathematics, science, and other content areas.





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