Title: **Familiar Technology Promotes Academic Success for Students with Exceptional Learning Needs**

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Abstract

Children with exceptional learning needs find it very difficult to retain content information from the regular curriculum. Many content teachers also find it difficult to adapt curriculum to the learning needs of these exception children within the confines of the classroom and without any assistance. Although many schools are equipped with technology assisted instruction; it is not being used either because of the ineptibility of the classroom teacher to incorporate the technology into the lesson objective or because of the lack of time it would take to plan how to incorporate learning technology in today's classroom. This research deals with how to take modern day technology that students with exceptional needs are familiar with and incorporate that technology into the classroom setting. The Office Special Education Programs (2011) has reported that the use of popular technology that children with exceptional learning needs are familiar with can be incorporated in classroom instruction and beyond.

Introduction

The federal government under IDEA' 2004 (PL 108-446, Individuals with Disabilities Education Improvement Act) has identified more than twelve disabilities which are in today's classroom. These children who have been diagnosed with these disabilties are receiving education and related services based on their disability in our nation's classroom. The No Child

Left behind Act of 2001 ensures that these individuals receive their education the in the regular classroom beside their non-disabled peers rather than in lonely isolated classrooms. Because of NCLB and IDEA'2004, the least restrictive environment for this educational pursuit is the inclusive classroom. Currently the terms "inclusion and responsive inclusion" are used to identify the movement to provide services to students with disabilities in general education settings (Smith & Dowdy, 1998).

Since students with disabilities have been placed in inclusive classrooms, there is much concern that their educational growth has become a serious issue. Darrow (2009) informs his audience that with any change, there are certain barriers that must be overcome to make sure the change is advantageous to those who have to endure the change. One of the ways this can be done is through the incorporation of technology that is familiar to students with exceptional learning needs. Such technology would include Wii, PlayStation, Xbox, IPhone, cell phones game systems, smart boards and tables, and IPads.

Although there are more than twelve disabilities as outlined in IDEA'2004, this research will cover those disabilities that are predominantly seem in today's classroom which include: developmental delay, emotional disturbance, intellectual disabilities, and specific learning disabilities (National Center for Education Statistics, 2009).

Students with Intellectual Disabilities

The federal government in the form of IDEA' 1990 refers to development delay is when your child does not reach their developmental milestones at the expected times. It is an *ongoing major or minor delay in the process of development*. If your child is temporarily lagging behind, that is not called developmental delay. Delay can occur in one or many areas—for example,

gross or fine motor, language, social, or thinking skills (National Center for Education Statistics, 2009).

The influence of familiar technology on students with Intellectual Disabilities (formerly known as Mental Retardation) has not been researched enough to provide suggested techniques of how to introduce it to these students. However, research has been completed when dealing with assistive technology and its impact on students with Intellectual Disabilities (ID.) Assistive Technology (AT) can be a device or a service. An assistive technology device is any item, piece of equipment, or product system that is used to increase, maintain, or improve functional capabilities of individuals with disabilities (Assistive Technology Act of 2004).

The research provides us with useful pointers to have in order to deal with students with intellectual disabilities and how to provide assistive technology to help them with independent living once they have moved on from a formal educational setting. Assistive technology may be considered appropriate when it does any or all of the following things: 1) Enables an individual to perform functions that can be achieved by no other means; 2) Provides access for participation in programs or activities which otherwise would be closed to the individual; 3) Increases endurance or ability to persevere and complete tasks that otherwise are too laborious to be attempted on a routine basis; 4)Enables an individual to concentrate on learning or employment tasks rather than mechanical tasks, and 5) Provides greater access to information and supports normal social interactions with peers and adults (Kelker, 1997).

Mechling (2007) discusses the benefits of having some necessary self-management tools for survival. The benefits are being able to increase the independence of persons with disabilities; decrease the need for continuous supervision; and free the teacher to attend to other

instruction. Functional students with intellectual disabilities should be able to have the liberty to live on their own as independent adults.

Technology can influence the students with intellectual disabilities to work towards being more independent individuals. There are many different technological devices that can be created in the likeness of technology that individuals without disabilities use and are able to boost the learning desire of students through association of popularity. The technology provided to these students gives them the ability to complete everyday tasks with devices that are similar to that of a modern day cellular device, computer tablets, such as the IPad, and even a laptop. The devices for students with intellectual disabilities give them access to be able to log in their daily routine and have reminders that let them know throughout the day, what they are supposed to do next.

A survey by The Arc (Wehmeyer, 1998) found that lack of information between assistive technology and intellectually disabled students about the availability of the device and the cost of devices were the main barriers. Other barriers included the limited training on device use and device complexity. These obstructions to assistive technology are reason enough for the incorporation of familiar technology. Using familiar technology would eliminate cost of expensive specially designed devices and replace them with gaming systems and cellular devices that are commonly found. Not only are familiar devices inexpensive but they are exactly that, familiar devices. Teachers and students alike do not have to learn a new device just to use it. Most people regardless of disability are familiar with cellular devices, gaming systems, and tablet computers so they can be ready to use out of the box, as opposed to a teacher having to learn the device then having to teach the device to the student.

Students with Emotional Disturbance

States use various terms (e.g., students with emotional and behavioral disorders, students with behavior disorders). Although the states refer to this category in many ways, most use federal guidelines for **emotional disturbance** to formally define and identify it (Individuals With Disabilities Education Act, 1997). The term means a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree, which adversely affects educational performance: An inability to learn which cannot be explained by intellectual, sensory, or health factors; An inability to build or maintain satisfactory interpersonal relationships with peers and teachers; inappropriate types of behavior or feelings under normal circumstances (U.S. Department of Education, 2009).

Students with Specific Learning Disabilities

Learning disabilities are associated with problems in listening, reasoning, memory, attention, selecting and focusing on relevant stimuli, and the perception and processing of visual and/or auditory information. These perceptual and cognitive processing difficulties are assumed to be the underlying reason why students with learning disabilities experience one or more of the following characteristics: reading problems, deficits in written language, underachievement in math, poor social skills, attention deficits and hyperactivity, and behavioral problems (LD online.org, 2011).

Virtual Reality Technology and Children with Learning Disabilities

Using virtual technology in the class room can help show the students the world. There are many advantages to using virtual technology in the classroom with students who have learning disabilities. Virtual technology gives students with learning disabilities access to the world and its environment, that maybe inaccessible, too expensive, or to dangerous in a classroom setting (Smedleyyle & Higgins, 2005). Using virtual technology, students with

disabilities can experience different laboratories and field trips at their own pace. This experience also can be repeated as many times as necessary. The information that is being presented is presented in a variety of modalities that is targeting the diverse learning styles of the students. Virtual reality is text and graphics based environment that is simulated by a computer (Smedleyyle & Higgins, 2005).

With today's advancement in technology, *virtual reality in the classroom* can be anything from a simple simulation program to full immersion involving special equipment (Smedleyyle & Higgins, 2005). There are many different levels of virtual reality that can be used in the class room. Virtual reality includes many different levels that are categorized by the level of immersion that the user experiences. Most sophisticated level involves the user manipulating an environment in which he or she is fully immersed (Smedleyyle & Higgins, 2005). To achieve full immersing in virtual reality a user will need special gloves and head-mounted display. With the special gloves and head mount display the program can register the user's movements and send this information to the computer and converts them into visual imagery which is projected onto LCD screens mounted in front of the user's eyes. For a more simple and inexpensive way for the student to interact in virtual reality, a student can use a desktop virtual reality system or an immersive reality system. A desktop virtual reality system the user must look at the screen to experience the virtual environment and using several computer monitors can extend the user's field of view. In immersive virtual environment, a user will use a head mounted display with stereo headphones and the images are projected onto a screen that shows front, back, and side views of the environment (Smedleyyle & Higgins, 2005). This kind of environment can be referred to as a *CAVE environment*. In a CAVE environment the user will use a joy-stick, mouse, or trackball to explore the environment. Also a data glove can be used to manipulate and feel

objects in the environment. Another inexpensive from of virtual reality that can be integrated in the classroom is simulations. Simulations are less expensive and more widely available forms of virtual environments that are activities completed in a computer-simulated environment (Smedleyyle & Higgins, 2005). In a simulation environment students assume a role and make choices that involve solving a problem or moving through an experience.

Virtual reality has many uses for students with disabilities that may help improve their everyday living. Applied Computer Simulations Laboratory, is a program that uses virtual reality to assist students with physical disabilities (Smedleyyle & Higgins, 2005). These programs can range from helping students with physical disabilities learn to drive their motorized wheelchairs successfully and safely in a natural environment and allowing students to participate fully in science experiments and activities. By using virtual technology in the class room students with physical disabilities can be provided the opportunity to walk and compete in sports. There is an internet version of the program that lets multiple users to practice driving in a shared virtual space with other users from across the country (Smedleyyle & Higgins, 2005). In the laboratory environment everything in the laboratory is completely interactive which minimizes the limitations usually imposed by students' physical disabilities (Smedleyyle & Higgins, 2005). There are also virtual programs that are specially designs for students that are sensory impaired. Virtual reality also has programs that can engages students that have cognitive disabilities by helping the student learn complex concepts with greater physical and emotional safety and in a more cost effective way (Smedleyyle & Higgins, 2005). Virtual reality is the equivalent of going on a field trip but the advantage for a student with disabilities can to go any day of the week and still being a safe environment.

Video Games in the Classroom

Video games are becoming the gateway to instruction for students across the country. Schools are incorporating interactive video games such as Konami's Dance Revolution and Nintendo's Wii Fit into classroom instruction. According to research, video games are flexible and cover the greatest number of subjects or areas of knowledge and possibly work the best in education (Moreno-Ger, 2009). Video games consist of a variety of glitches that must be resolved through a story line by the player designed to aid students in the learning process. The technology must be able to adapt to the specific educational needs of each student including those who have disabilities.

Traditional learning techniques such as role-play and problem-based learning can be replicated and practiced within artificial environments. Using video games, players are forced to create new data, learn new ways to do things, solve difficult problems, and engage in meaningful interactions within the games and with one another. They have to think and engage in the games in order to succeed (Rice, 2005). This concept allows students to take responsibility for their actions and provides immediate feedback. With the growing number of students benefiting from the use of virtual educational environments, video games are becoming an essential part of education.

Students with Attention Deficits Disorders/ Attention Deficit Hyperactivity Disorder

These are children who can't sit still, who never seem to listen, who don't follow instructions no matter how clearly you present them, or who blurt out inappropriate comments at inappropriate times. Sometimes these children are labeled as troublemakers, or criticized for being lazy and undisciplined. However, they may have ADD/ADHD. Attention deficit hyperactivity disorder (ADHD) is a disorder that appears in early childhood. You may know it by the name *attention deficit disorder*, or ADD. ADD/ADHD makes it difficult for people to

inhibit their spontaneous responses—responses that can involve everything from movement to speech to attentiveness (helpguide.org, 2011)

Using SMART Board with Attention Deficit Hyperactive Students

SMART Board interactive whiteboards can help teachers to teach students with ADHD by getting them more involved with the lesson, while keeping the lesson structured. Teachers can allow students to manipulate the SMART Board screen with their hands, and interactive games and activities can be imbedded into SMART Notebook lessons to keep students engaged and focused (www.smartboards.com, 2011).

Features of SMART Notebook software like “reveal” and “spotlight” that keep from too much information being displayed on the SMART Board screen at once can help students with ADHD to focus on key areas, and teachers can encourage students to highlight these key points and ideas on the SMART Board by drawing on the SMART Board screen in digital ink. The characteristics of students with ADHD can include communication problems (both verbal and nonverbal), impaired social interaction and unusual or repetitive interests and activities. Visual stimuli, interactive manipulatives and sound are all important learning augmentations that can help students with ADHD to excel in the classroom. The SMART Board interactive whiteboard can help teachers to include these sorts of learning enhancements by including engaging multimedia in their Notebook lessons, encouraging students to interact with the SMART Board with a hands on basis, and creating schedules and templates to instill routine and structure in lessons (LDonline.org, 2011)

The large format and interactive quality of the SMART Board creates a natural focal point for the class, enhancing the experience of students with attention disorders. SMART Boards, or interactive white boards, allow instructors to reach out to students who have a wide variety of

learning styles. Rather than forcing a classroom of students to rely heavily on one or two learning styles exclusively, such as auditory or visual learning, SMART Boards give students the opportunity to interact with the information in ways that they can process more effectively. Also, SMART Board technology is capable of presenting information to students with different learning styles simultaneously, preserving character of an inclusive classroom (www.smartboartcom, 2011).

Visual Learning for Children with ADD/ADHD

Visual learners benefit from the multi-media presentation of information, particularly when key data is presented in software format, with bulleted points accompanied by images, graphs or charts. Switching to a browser allows the instructor to access online visual aids, such as video clips, to augment the lecture (LDOnline.org, 2011).

Auditory Learning for Children with ADD/ADHD

Auditory learners benefit with the addition of audio tracks during the presentation of material. Lectures can also be recorded directly onto the SMART Board, and then uploaded to a class website so students can replay the lecture along with the on-screen notes. They can also listen to question-and-answer sessions, including the answers to questions they posed themselves (LDOnline.org, 2011).

Kinesthetic Learning for Children with ADD/ADHD

Kinesthetic learners perform best when they can actually manipulate the data. The touch-sensitive SMART Board, using the interactive pens provided, allows students to move large blocks of text or images around on the board, much as they would with a mouse on a computer screen (LDOnline.org, 2011).

Conclusion

Presenting children and youth with exceptional learning needs with familiar technology increases their chances of success not only in the classroom but with self-esteem issues. Feeling connected in the classroom with today' curriculum through technology does much to decrease our drop rate among our students with exceptional learning needs thus making the challenge of leaving no child behind much easier to attain.

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