Smart Board Technology : Transforming Inclusive Environment Into E-classroom for Children With Specific Learning Disability

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Abstract:

The integration and amalgamation of Information and Communication Technology in the process of learning and teaching helps to create barrier free environments which enable all students to become competent , confident and self-directed learners. With the use of technology as one unavoidable reality , it is mounting its strategic role as a powerful motivational tool for students with special needs , increasing the scope and opportunities for learners with special educational needs. In the view of the changing context of the increasingly transforming landscape of information and technology , the present paper discusses how children with Specific Learning Disabilities, being digital natives are expert users of ICT and engage fluently and actively with the digital world in their everyday lives. As a transformative tool Smart Board, Information and Communication Technology offers a great potential to support lifelong learning for all groups of students, including those with or without special educational needs, enhancing independence, integration, and equal opportunities and extensively facilitating their recognition and inclusion in society as valued, respected, and contributing members.

Keywords: *Smart Board, Technology, Inclusive Environment, Specific Learning Disability*

I. INTRODUCTION

To participate in the nation building tasks, the capacities required in the students in their formative years they spend in the educational institutions are: the capacity for research or inquiry, capacity for creativity or innovation, the capacity for moral leadership, and the capacity to use higher technology.

(Dr. A.P.J. Abdul Kalam)

Societal changes in the present era of twenty first century have generated new expectations for contemporary education system in India. The massive introduction of the 'Digital India' initiatives and the concept of E-education and E-learning has tremendously paved way towards digital empowerment of children with disabilities. The future generation is going up in a world in a world vastly different from the times of 'Chalk and Talk' teaching , witnessing the global evolution of increasingly technology-driven, revealing considerable assistive technologies and readiness to imbibe and learn using digital media.

Comprising the digital divide, the mode of digitalisation has transformed the Indian into a digitally empowered society , giving children with special educational needs a greater platform to learn as digital learners. The new digital generation children prefer to be engaged actively in learning that is relevant , fun and instantly useful and discover course content through exploration, creativity, interaction and collaboration rather than the lecturing methodology. More than 60 percent of students today are visual or visual kinesthetic, auditory and tactile learners (Jukes et al. 2010, p. 31).

The globalising phenomena of information and communication technologies (ICT) is a distinct characteristic of modern times. The speed and immediacy of ICT coupled with opportunities for increased information flow through multiple routes of communication , suggest that we are living in a time of unprecedented change, with ICT affecting the way we live and function as individuals and as a society (Castells,2004). Envisioning the role of ICT in education with the advent of the 21st Century, teaching and learning process has globalised in its structure and is rapidly changing.

A pivotal force in bringing about this emerging change is the use of information and communications technology (ICT) which provides richer, more immediate, world-relevant educational resources and opportunities. The technology certainly has progressed , when used well, ICT enriches learning and enhances teaching. It invigorates classroom activities and is a powerful motivational tool that encourages learners to progress in more personalised and self-directed ways. Interactions between teacher , pupils and technology necessitate more than the transmission of knowledge from either teacher or technology to pupil. Emerging technologies of the information age for learning will, in a unique way, provides greater opportunities for more active and personalised learning.

ICT has become one of the basic building blocks of modern society. Understanding ICT and mastering the basic skills and concepts of ICT; it is added as a part of education, together with reading, writing, and numeracy in many countries. There is a widespread belief that ICTs have an important role to play in changing and modernizing educational systems (Swamy, 2012). The technologies present in todays scenario and those mounting to emerge are not only and important in reference to the curriculum content but have added to the present educational system newly evolving resources and didactical tools suitable to support the learning process.

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In the view of rapidly transcending context of information age and the advancement of teaching friendly devices, the demands of special education in accommodating and adapting new environments has risen in the 21st Century. Education , a commanding and powerful instrument of social change and often initiates upward movement in the social structure. Access to equal opportunities in information and knowledge as transformed as a social requirement and a fundamental aspect. There by with the educational paradigm shifting its nature from 'instructional paradigm' to the 'personal paradigm', information and technology is considerably helping to bridge the gap between the 'Haves' and the 'Have Nots' . Inclusive education has taken centre stage all over the world in recent decades, particularly in introducing educational reforms to prevent exclusionary practices.

The Indian educational framework has a system of automatic promotion to the next class irrespective of the marks obtained by the students . This no 'retention' along with a 35% marks in each subject leads to the students to a class which may be above their ability level thus widening the discrepancy between the actual and the expected performance at that class. The students go through trauma and struggle with their academic performance which becomes apparent in their academic and non academic lives. These students need academic competence in their achievement , adequate classroom environmental accommodations , adequate classroom survival skills , defined as non academic behaviours such as attending class daily, arriving promptly at class, being prepared for daily lessons , meeting assignment deadlines , addressing teachers appropriately and following written and oral work.

Technology is arguably even more relevant in special education than it is in general education because it makes the complex simple and it addresses the individual needs of the learner (The International Council for Education of People with Visual Impairment, 2007). Similarly, Johanson (1998) posited that to create learning activities and to set up inclusive learning environments that enable the child with disabilities to learn and play along with other children, technology is needed. In addition, Hasselbring and Glaser (2000), pointed out that technology has equalized holistic development by giving opportunities to children with disabilities, their families, and teachers.

In this context , application of information and communication technology based platform plays an extremely essential role as an assistive device in improving the learning needs of children with specific learning disabilities, possessing a very beneficial impact on improving their self esteem , self competence and facilitating their acquisition of useful study skills. With the bursting into the classrooms at all levels , computers have become tools for instruction for students with learning disabilities.

II. FOSTERING SMART BOARD TECHNOLOGY IN INCLUSIVE ENVIRONMENT

As new concepts of digital learning has evolved , modern developments of innovative technology today is seen as a catalyst and a driving force in progress of education as means of changes from 'industrial age' to 'information age'. The UNESCO World Education report (1998) notes that new technologies challenge traditional conceptions both of teaching and learning and by reconfiguring how teachers and learners gain access to knowledge and have potential to transform teaching learning process. Information and Communication Technologies (ICTs) have had significant impact on the traditional school system. They have provided innovative opportunities for teaching and learning, and they have engendered advances in research about how people learn, thereby bringing about rethinking in the structure of education (Lopez, 2003). ICT in schools has educed modification in teachers' role, from instruction to guidance, assisting students in search of individual learning methods and evaluation of their learning processes and outcomes; and in students' role, e.g., becoming active learners engaged in collaborative, authentic learning within the community content (Kozma et al., 2003).

With the enormous paradigm shift in the field of educational technology and infusion of information and technology, it is widely observed, significant number of students at risk with learning disabilities or special educational needs require assistance and support in their learning.

The concept of 'information society' is widening the learning outcomes of the 'Knowledge Society'. Electronic and information technology over the years has shown amazing developments in the field of special education and has created a revolution in possibilities for children with special needs. Application of computer based technology has offered several interactive , innovative and creative learning styles, including raising the level of child's engagement in the classroom, motivating and promoting enthusiasm in the teaching-learning transaction. Computer assisted and instructed programmes have paved a direction towards adequate and equal education opportunities in the inclusive classroom for children with specific learning disabilities, transitioning 'yesterday's disabled students' as 'today's enabled students' , providing endless opportunities, accessibility, and limitless flexibility in the acquisition of information and perception of knowledge.

Among children with disabilities, those with Specific Learning Disability constitute a distinct, and often invisible section. With the advent of new effective and assistive tools and E-learning being increasingly used, many children with disabilities are able to function more independently, have increased opportunities, and have improved access to the world through assistive, adaptive (alternative), or augmentative devices. In reference to the 86th fundamental right of every child mandates the government to ensure that all children, including children with disabilities has access to education, and needed support must be provided. The Person with Disability Act (1995) speaks about mandates on the part of government to provide needed educational facilities for the disabled by improving the curricula, child centred activities and effective teaching learning strategies.

Rose and Meyer (2002), authors of Teaching Every Student in the Digital Age: Universal Design for Learning, explain that that our students have many kinds of intelligence and many ways of learning. Further, they describe how specific

techniques matched to the principles of Universal Design for Learning can support diverse learners. For example, to support recognition learning, teachers should provide multiple, flexible methods of presentation. To support strategic learning, they should provide multiple, flexible methods of expression and apprenticeship. To support affective learning, teacher should provide multiple, flexible options for engagement. These three categories of support provide the foundation for the three principles of UDL. As educators differentiate their teaching, Universal Design for Learning becomes an important construct and guide as it is a research-based model for curricular design that ensures participation in the general educational program of all students, including those with disabilities (Center for Applied Special Technology (CAST), 2007).

The UDL framework proposes that educators strive for three kinds of flexibility: (a) representation, to represent information in multiple formats and media, (b) expression, to provide multiple pathways for students action and expression, and (c) engagement, to provide multiple ways to engage students' interest and motivation. Educators work towards flexibility by identifying and removing barriers from their teaching methods and curriculum materials.

It is important to understand how Smart Board technology supports the principles of UDL:

- **Multiple means of engagement** – Smart Board is highly engaging for students and assist in sustaining interest and focus, which is especially helpful for students with Specific Learning Disabilities ;
- **Multiple means of representation** – Smart Board provides educators with the ability to present information in a variety of linguistic and non-linguistic formats, e.g. graphics, audio, video clips, text, etc.; and
- **Multiple means of action and expression** – Smart Board provide students with options to demonstrate their understanding of concepts and options to interact with and manipulate learning materials; for example, a student with fine motor challenges can use a special pen or finger on the board.

It is often seen that students with Specific Learning Disabilities have difficulty with skills such as reasoning, reading, listening, spelling, writing, organizing information. Such tasks and skills during processing of information becomes a tough task for them to achieve. Appropriate computer software and information and communication technology can make these essential tasks easier, which further allows a student to feel a sense of accomplishment. With such assistive technology and barrier free environment , the child with learning difficulty secures a feeling of being successful and greatly enhances an individual's self-esteem and may even make necessary tasks enjoyable, fostering learning and acquisition of knowledge .

Technology is also changing how one learns and how lessons are implemented in classrooms. Larson and Marsh's (2005) idea of sociocultural theory describes how literacy knowledge is constructed through tools teachers and students use in everyday life in and out of school. Therefore, integrating technology into classrooms and using it to teach lessons is critical.

The SMART Board allows students to interact with one another and communicate socially. The interactive white board provides "a valuable method of delivering content in an interactive and meaningful context to facilitate student engagement.." (Giles & Shaw, 2011, p.37). Therefore, as conveyed by the sociocultural theory, students are communicating and interacting with others while using a form of technology that encourages societal practices.

Using a SMART Board in classrooms has become quite popular in recent years. A SMART Board is an interactive white board that displays images from the computer monitor with the surface being used as a giant touch screen (Mowbray &Preston, 2008). The computer can be controlled from the SMART Board by touching the SMART Board screen with your finger or one of the electronic pens incorporated with the board. The ability of the Board technology allows one to present information within a group arrangement, in which all students can see the images on the board due to the large interactive screen (Gast, Krupa, & Mechling, 2007).

The SMART Board is an exclusive device that gives students the chance to collaborate with one another to create projects and ideas, while being able to present them to the entire class. The benefits of the SMART Board include, pressing icons to hear pre-recorded sounds, watching simulations and viewing graphics, capturing text or areas of screen and annotating with the pen, saving notes or drawings for future use, and engaging students with educational multimedia activities (Mowbray & Preston, 2008). The SMART Board offers numerous applications to students to help create an engaging and motivating atmosphere where students feel comfortable to participate. There are many ways the SMART Board can benefit teachers and mainly students. Introducing a lesson to determine students' prior knowledge and understanding, making predictions, building up instructions for practical tasks, and recording results can be used on the SMART Board effectively and efficiently (Mowbray & Preston, 2008). Using the SMART Board to introduce a lesson can grab the student's attention because of the engagement it provides for the students. This can help the students to become interested and want to learn more about the topic. For example, students can group pictures of the objects into the specific area they belong to introduce a lesson and test the students prior knowledge at the same time. When making predictions students can draw a picture on the SMART Board to show their prediction (Mowbray & Preston, 2008). Using the SMART Board for predicting can help students to stop and think about what they think will happen, gather ideas while collaborating with others, and then write or draw it out on the SMART Board. Having step-by-step instructions on the SMART Board will help students be able to complete practical tasks easier (Gast, Mechling, and Thompson, 2007).

III. CONCLUSION

SMART Boards support inclusive classrooms by offering students many ways to learn information, express ideas, and demonstrate understanding. The SMART Board also allows teachers to address different learning styles - visual, auditory and kinaesthetic. This technology engages all types of students and facilitates differentiated instruction. A SMART Board helps students with autism, for example,

improve communication skills through group collaboration. The Smart Board gives educators the ability to present things visually, and provide ease in creating and altering activities to control students' learning. Teachers enjoy using the SMART Board to create visually engaging and interactive lessons. Since students with special needs frequently respond well to visuals, the SMART Board takes this one step further by projecting really large visuals.

The technology provides teachers with an easy way to project worksheets, pictures for background knowledge, or any other visuals to share with the entire class. Special educators like the fact that the SMART Board is flexible and gives the opportunity to change activities quickly. Teachers can create an activity and change it as students watch.

This technology is very intuitive to use, too. While most users do require some training, most people can walk up and start using a SMART Board immediately. A SMART Board does not require any special software; software currently installed on a personal computer will work seamlessly. Teachers who have used SMART Boards report that students with special needs have made huge strides in learning. Many attribute these gains to teaching with these interactive whiteboards in their classrooms. Students with Specific Learning Disabilities may require a variety of accommodations to access the curriculum, including technology. In the student's Individual Education Plan (IEP), accommodations may include voice-to-text software, text-to-speech software, touch screen technology, and interactive whiteboards. As Universal Design for Learning (UDL) is strongly linked to technology, teachers can use the framework of UDL in the classroom, not just for students with Specific Learning Disabilities, but for all students.

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