WEB-BASED TECHNOLOGY FOR CHILDREN WITH LEARNING DISABILITIES

By

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ABSTRACT

Individuals with special educational needs may face difficulties in acquiring basic skills needed for learning such as reading, spelling, writing, speaking, understanding, listening, thinking or arithmetic. The difficulties they face in the learning process have begun to attract serious attention throughout the globe. They suffer from severe learning problems which affects their performance in academics. Such individuals with learning disabilities are found across all ages and in all socio-economic classes. Learning disabilities may affect individuals differently at different stages of life. So it is imperative to adopt innovative educational strategies in the classroom to help these academically weak learners to enhance their performance through the extensive use of technology.

Instructional strategies like web-based learning encourage active learning and meet the diverse needs of the learners through the use of technology in education. Web-based instruction, where the medium of instruction is computer technology is delivered over the internet which allows learners to use reference material based on their individual needs through a wide variety of media such as sound, animation, text, graphics and video. Web-based instruction is a strategy that can be effectively designed and implemented for learning-disabled children as it provides variety and flexibility in learning. Educational technologies like web-based learning can help disabled children in overcoming severe learning problems and permit a greater number of opportunities for learners' epistemological styles, pace of learning, self-correction and modification of learning. It caters to the needs of diverse learners and it helps to enhance the learning of such pupils by using different instructional techniques and thus integrating educational technology in the classroom. Web-based learning can help children with learning disabilities to learn in an enjoyable and meaningful way. Hence there is a need to create a web-based environment as technology advances and more and more students with learning disabilities attend web-based classes.

Keywords: Learning Disability, Web-based Learning, Computer Technology, Internet.

INTRODUCTION

Educational technology makes desired improvement in the teaching-learning process by making it effective and efficient. The extensive use of technology enables teachers and learners to identify and use various strategies that integrate with their teaching and learning processes. Technology deployed in education can help to remove inequities between the schools of developing nations and developed nations and between rural and urban areas. It can maximize and individualise learning and make it more productive and relevant. The use of different instructional strategies contributes to increased effectiveness of the educational process.

Instructional strategies like web-based learning encourage active learning and meet the diverse needs of the learners through the use of technology in education. It involves the use of various technological devices in the educational activities. It helps the learners to attain the objectives of educational technology such as individualizing instruction, providing quality education, offering equal educational opportunity etc. It also increases productivity by enhancing the human capability. Technologies in learning are used to enrich, or add variety to traditional form of learning. The use of such technologies in the teaching and learning processes helps to meet the diverse needs of the learners.

Web-based Technology

Web-based technology is a growing trend in the field of education. The rapid growth of information and communication technologies has led to the development of web-based education. It makes learning much easier as one need not be physically present in the classrooms all the time. Web-based training is delivered over the internet using a web browser. It includes interactive methods such as bulletin boards, chat rooms, instant messaging, video conferencing and discussion threads (Bharathi, Vithya & Rani, 2009).

Web-based instruction refers to providing a learning environment that is mediated and supported via the Internet/Intranet and connected to a computer with hyperlinks to resources outside the instructional domain. Not only learning can occur through interactions with the materials but also through a community of learners using chat, threaded discussion, e-mail, whiteboards, or other programmes which provide a combination of these environments. One aspect of the web-based instruction is the incidental learning that frequently occurs. In a traditional face-to-face instructional environment, learning is considered to be intentional and there is usually very little incidental learning (http://www.proofof concepts.com/web_guide/What_is_Web.htm).

Web-based technologies have created a number of new options for teaching and learning. Possibilities range from using information technology in a traditional classroom setting to a distance education model where there are no formal meetings in an actual classroom (Kumar, 2008). Web-based instruction utilizes the attributes and resources of the World Wide Web where learning is organized in a nonlinear format that allows learners to reference material based on their individual needs and uses a wide variety of media through sound, animation, text, and video (http://www.moresteam.com/ADLMetaAnalysisPaper.doc).

Web-based instruction is a type of education in which the medium of instruction is computer technology. It is designed so that the computer displays lessons in response to interactions of the learner or the user. Computers and the web allow learners to view, retrieve, and store information at any place and any time (http://www.proofofconcepts.com /web_ guide/ What_is_ Web.htm). Thus the web-based instruction is delivered via the computer using the internet, which makes it capable of instant updating, distribution, and sharing of information.

As a special type of hypermedia learning system, web-based instruction represents a non-linear instructional medium that may encourage deeper processing and cognitive flexibility in learners. The use of hypermedia may not only lead to deeper learning by encouraging trainees to think about how new information is related to existing knowledge but may be a superior medium to the extent that it offers a cluster of learning modes through text, audio, graphics, synchronous and asynchronous communication that can be tailored to individual learning styles (http://www.moresteam.com/ADLMetaAnalysisPaper.doc).

The real value of web-based learning is to help students acquire knowledge in order to function as active, self-reflected and collaborative participants in the information society. Changes caused by academic institutions, course content, ethical, legal, cultural issues need to be considered in the development of web-based learning. It calls for new design models and approaches in the development of effective online instructions based on the characteristics of the web-based learning environment (Gnanam & Sivakumar, 2010). Web-based instruction thus helps to create a meaningful learning environment where learning is fostered and supported.

Learning-disabled Children

Learning disability is a real problem in today's society and is a kind of behavioural deficit almost always associated with academic performance. Learning disabilities are disorders that interfere with the development of the basic academic skills. It is a condition where a child's achievement is substantially below what one might expect for the child (Kumar & Raja, 2008). There are a variety of skills impacted by learning disabilities which include language and reasoning abilities as well as calculation and motor skills. The learning disabilities which impact a child's ability to learn are dyslexia (reading deficiency), dysgraphia (writing deficiency), dyscalculia (arithmetic deficiency), dyspraxia (motor deficiency) and dysphasia (speech deficiency).

Learning-disabled children are those categories of children who lag behind in the acquisition of basic skills needed for learning such as reading, writing or arithmetic. Most education specialists working in the area of populations with special needs consider "learning-disabled" as an umbrella term to include individuals who, for sometimes for unknown reasons, have diverse learning problems (Baumberger & Harper, 1999). The learning-disabled population is extremely heterogeneous, with learning problems consisting of a number of subtypes. A student with a specific learning disability may be strong in one area but may perform poorly in another area of learning.

Learning-disabled children may have average or above average intelligence and they also have normal hearing and vision. And also they may be slow learners, average learners or even gifted children. But they apparently cannot use information transmitted by the senses to the brain as accurately as most other children. Therefore they may do poorly in school or not as well as they can (Kumar & Raja, 2008). Researches indicate that children with learning disabilities may have average or above average intelligence. In spite of having average or above average intelligence, many children perform poorly in academics. A child who is otherwise intelligent but does not meet the expectations of parents or teachers in academic activities has been the subject of research all across the globe (Karanth & Rozario, 2003).

There are a variety of disorders found among the learning-disabled children which may affect the way verbal and non-verbal information is acquired, understood, organized, remembered and expressed. The characteristics that children with learning disabilities exhibit are delay/difficulty in understanding or using spoken/written language, difficulty in reading and written expression, limited vocabulary, difficulty with mathematical concepts such as calculation, time and space, problems with attention, memory and perception, difficulty in carrying out a sequence of instructions (Saravanbhavan, 2009).

Web-based Technology For Learning-disabled Children

As classrooms become more culturally diverse, it becomes imperative that differentiated instruction occur during the early school years because today's classrooms usually contain students with a wide range of abilities and varied educational backgrounds who learn at different rates and in different ways. Webquest is a tool that meets the demands for differentiated instruction in a clear and concise way. Specifically, webquests have the ability to not only provide accommodations for all students with special needs but they have the ability to provide all students with special needs access to the general educational curriculum as well (Rader, 2009).

Through virtual reality and hypermedia applications, the real world can be stimulated or brought into the classroom. Recent prominent technologies such as internet, e-mail and e-learning bring students with disabilities close to real world environments and apprenticeship training and thereby authenticate learning. Imparting teaching and learning for disabled children through distance mode of learning has numerous advantages such as improving the quality of education, enhancing the life long learning process, availability of quality information, ability of the web environment to stimulate the interest of the students, the promotion of engagement and communication between students and the tutor, the recognition of value of web-learning and e-learning etc (Kasinath, 2009). Preparation of web-based learning materials for students with the judicious use of different combinations of different elements of multimedia may bring about curiosity and interest to learn which can enhance the academic ability of learning-disabled wards.

With the rapid growth of internet, the modern and reputed educational institutions are using web tools such as Search Engines, Online subject specific sites, e-mails, e-books, etc in the classroom situation to teach the subjects in an effective manner. Teachers can arrange interserver or hyper mail account, where students can safely ask questions and share ideas. The teaching environment may also include a whiteboard, web board, chat board and a message board, each supporting a plethora of information, teaching and classroom control tools (Ahmed, 2010). The use of web-based tools may help to create a conducive learning environment for the educationally handicapped students.

The students with special educational needs require

special educational services to develop to maximum capacity. Various educational services may help learning-disabled students to overcome their problems. Special teaching facilities are very much needed to meet the personal needs of these children (Kumar & Raja, 2010). Thus teaching facilities with the help of web-based technologies can meet the needs of such learners.

There is a need to create a more inclusive web-based environment as technology advances and more and more students with learning disabilities attend web-based classes. A study (Tandoh, 2002) on investigating the strategies and limitations, students with learning disabilities namely dyslexia, dysgraphia and dyscalculia face in a web-based instruction environment and the contributions of web-based instruction course designers and their impact on web course design revealed that learning through the web helps to increase students' motivation, self-esteem and a sense of autonomy.

Web-based instruction may lead to greater instructional effectiveness including media variety, facilitation of web exploration, and learner ease and flexibility of use. Opitz (2002) on determining the effects of web-based learning modules for adolescents with learning disabilities found that web sites created using universal design guidelines that adhere to federal recommendations for web accessibility may assist all types of students in improving the accuracy of response when using information from a website.

By choosing materials and activities suited to their level of learning and by stimulating their urge to bring out their best, teachers can help the pupils with learning disabilities to turn their difficulties into special opportunities to be model achievers (Kumar & Raja, 2009). Educational technologies like web-based learning can help disabled children in overcoming severe learning problems and permit a greater number of opportunities for learners' epistemological styles, pace of learning, flexibility, self-correction and modification of learning (Kumar, 2010).

Implications

School teachers have a great role to play in meeting the needs of pupils from a larger number of diverse backgrounds and with increasingly diverse special needs.

Web-based instruction is one of the ways of differentiating instruction for the benefit of learners with special educational needs. Web-based learning allows students to engage in learning sessions that are less impacted by time restrictions, learning schedules etc. So it leads to variety and flexibility in learning. Web-based learning can thus be effectively implemented for enhancing the academic performance of learning-disabled children.

Course designers also have a greater responsibility in improving web-based instruction by taking individual differences into account. Websites designed with web accessibility provide more opportunity for learning than those without accessibility. Web accessibility offers equal access to learners of all abilities. Different web resources can be designed to support different methods of learning thus enabling students to learn in the ways they find most effective.

Awareness about learning disabilities like dyslexia, dysgraphia or dyscalculia is very much essential to investigate about new technologies like web-based learning that can be most appropriately used to facilitate the learning of disabled students. Web-based technologies have the potential to create an interactive, collaborative learning environment in which students experience confidence and success. It can help students with learning disabilities in developing motivation and self-esteem by allowing students to take more responsibility for their learning. Hence researchers need to come forward to carry out more intensive studies on this area to meet the special needs of academically-disabled students who need special attention.

Conclusion

Web-based technology is thus found to be a strategy that can be implemented for learning-disabled students. This type of instruction can be effectively designed to cater to the needs of children with learning disabilities as it provides opportunities for a variety in learning, collaborative learning, flexible thinking, incidental learning etc. Web-based learning could create a wide range of learning opportunities for educationally backward learners. It caters to the needs of diverse learners by adopting different learning styles such as visual or auditory learning styles. Also

it helps to enhance the learning of such students by using different instructional techniques and thus integrating educational technology in the classroom. Adoption of innovative teaching strategies like web-based technology can help engage such disabled children which help them to learn in an enjoyable and meaningful way. So it is imperative to adopt such instructional strategies to help the academically weak learners to improve in academics.

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