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ROLE OF COMPUTER ASSISTED INSTRUCTION (CAI) IN TEACHING TO CHILDREN WITH SPECIAL NEEDS: REVIEW

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Abstract

The world is moving towards science and technology to become better human being as well as for mankind work which has vital role to lead personal, social and professional life in present and future. As we know, educational technology has many generation i.e. Gurukula era, institutional based, satellite, distance and open learning, internet and web based education etc. Today, the world is on internet and ICT based generation. Educational technology or ICT has been promoted by E-Sadhya, i-tec; National Institute of Mental Health (NIMH) developed educational devices, Media Lab Asia, barrier break technology and many mote technology based instructions. Presently the Government of India has major focus to promote digital and accessible India. The use of computer and other technical devices has improved teaching learning process. Therefore the use of Computer Assisted Instruction (CAI) as teaching material has become the need of the present education system. This paper review the Role of Computer Assisted Instruction (CAI) as teaching material in special education to teach the different aspects of the academic and, communication skills to children with special needs. This concepts paper aims to review the related literature of the various researches done and published in this area and a research gap for further research. The major findings will show a positive impact of technology on learning of children with special needs. The study supports the fact that teachers and parents can also use the technology where ever can be easily used in the curriculum and teaching learning process.

Keywords: *Computer Assisted Instruction (CAI), Children with Special Needs (CwSNs), Teaching and Disability*

Conceptual Framework

The use of computer as teaching material in the learning process of children with special needs is an important concern for the people working in the area of special education. In Computer Assisted Instruction (CAI), the computer interacts directly with the learner with

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the assistance of teacher. The computer is used to present lessons and gives instruction to learner. Then learner interacts by giving appropriate responses to the programmed questions. Computer Assisted Instruction (CAI) has many types of educational programme such as drill and practice, tutorial, educational games, demonstration, simulation, problem solving and discovery learning. Computer can be used to combine approaches and tailor individual learning experiences. This is the reality that computer is a powerful tool in teaching and training for these groups of children having special needs. Through Computer Assisted Instruction (CAI) teacher can teach text, graphics, sound and videos to enhance the teaching learning process in all the subjects of the curriculum.

Some Children are highly gifted and some children are less talented; some have physical disabilities like blindness, deafness, speech problems, motor problems; some are intellectual challenged; some may be suffering from epilepsy, emotional disturbance and some have learning disabilities. In Some children the deviation may be so pronounced that it marks them as exceptional or special needy. While all students require support to varying extents from teachers, classmates, family and the community at large in order to derive the fullest benefit from their school experience, these exceptional children have special needs that demands additional support. Such support may be in the form of special educational services, special educational programme or special infrastructural or learning facilities and most importantly, special skills on the part of the teachers, in order to enable them to participate effectively in the learning process, in the school setting or outside it.

"Education" is the fundamental right of every disabled or non-disabled child for his/her overall development. Over the years, there have been a lot of changes in the philosophy of education of children with special needs. The paradigm shift to segregate the children with special needs from the society to include them in mainstream and provide education in inclusive environments. The recent innovations in information technology and their implication in the field of education opens greater opportunities for professionals in training children to maximize their potential and also made it possible to share and borrow information across the globe.

In the present study researcher is working on three objectives i.e. to find out the major role of Computer Assisted Instruction (CAI) in teaching to CWSNs specially mentally challenged, to examine the role of CAI with regards to improving academic, communication

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and other skills to CWSNs and to examine the major reviews on Computer Assisted Instruction (CAI) for improving learning and comprehension of CwSNS.

Many studies have been conducted on the use of Computer Assisted Instruction (CAI) in teaching to children with special needs. Some studies have discussed here which shows the positive effect of Computer Assisted Instruction (CAI)in teaching the various skills to children with special needs**.**

Aim of the Study

It is a common phenomenon that training with systematic planning enable a child to learn various skills with more efficiency and easily especially in the case of children with Intellectual Disability. Various strategies have been used to teach the children with special needs. Very few studies are available related to implantation of ICT in special education and using Computer Assisted Instruction for improvement of various skills in the children with handicapped in India. Anitha (2005) did a study on Effect of computer assisted instruction on learning of multiplication among children with mild mental retardation. Kumar, M (2012) conducted a study on the evaluation of computer assisted instruction in teaching language & arithmetic to children with mild mental retardation. Narayan et. el. (1994) developed a software package under CAI for children with Mental Retardation (CAI) multicentred projects-1. The first package included 1. Reading functional words, 2. Numbers up to 10 and prepared for DOS environment. Sharma (2004) conducted a study to find out the efficacy of computer assisted instruction in improving mathematic concepts of students with mild mental retardation. The Present study is expected to through light on the impact of CAI on the development of motor, academic and communication skills in children with mental retardation. The findings will be useful to develop more packages to teach the concept to children with needs. The result of the study could be significant and likely to provide the input for charting an entirely new teaching and learning programme for the children with intellectual disability.

Researches in the area of Computer Assisted Instructions:

The major research study revealed by **Hess and Tenezakis in 1971** compared attitudes of junior high school CAI participants with those of nonparticipants towards teachers, computers and other sources of information. He found in the study that both groups had a

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more favourable view of computer than teachers, textbooks or television news. **Edward, Norton Taylor in 1975** reviewed research on the effect of CAI on achievement, retention and the learning rate and its effects on student of differently ability levels. Computer Assisted Instruction (CAI) as a supplement to traditional, teacher-directed instruction was found to be very beneficial. **Burns and Bozeman in 1981** conducted a study on relationship between CAI and mathematics achievement. They presented the results of meta-analysis of 40 studies to compare the effectiveness of traditionally instruct alone with a combination of traditional instruction and CAI on students mathematics achievement. The combined traditional CAI approach was significantly more effective. **Gore, Morrison, Mass and Anderson in 1989** studied improving and reinforcing basic reading skills through computer. The sample consist five years old children. The study was conducted to compare the basic reading skills by applying computer software programme through drill and practice and found that the CAI programme has a positive effect on improving basic reading skills with and without use of drill and practice computer programme. **Rupe in 1986** reviewed research on the effect of CAI as well as reviewing literature on other aspects of computer use in education. The report of review recealed favourable results regarding CAI and achievement, attitudes, learning time requirements, learning retention, social development and self-esteem. **Campbell, Pele, Horn and Leigh in 1987** compared computerized drill and practice programme with that of similar students using a conventional prints drill programme. These were no statistically significant differences between groups. **Hall, McLaughlin & Bialozor in 1989** reported the result of a study in which CAI was used with mildly handicapped elementary students. The spelling achievement scores of CAI participants was significantly greater than the scores of conventionally instructed students and half the CAI students had scores equal to those of their non-handicapped peers. **Mastropieri, Scruggs and Shiah in 1997** studied on the arithmetic problem solving performance among children with mild mental retardation. The skills were taught through computer assisted instruction and traditional method. The study found that the children with mild mental retardation may be use computer assisted instruction successfully to facilitate arithmetic problem solving. **D. Mioduser at el in 2000** studied on effectiveness of computer based instruction for teaching early reading skills acquisition when compared with more traditional methods of instruction. The study was conducted with sample of 5 to 6 years age children with severe learning disabilities studying at pre-school, were assigned to one of three group i.e. phonological awareness, word recognition and letter recognition skills.

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The study found the significantly difference between reading intervention programme through computer than traditional practice through printed materials or formal reading practice. **Mary Jo Noonan in 2000** studied on comparison of Computer assisted instruction with interactive software and Teacher assisted instruction with manipulative. An adapted alternating treatments design was used in this study. The study found that both instructional strategies produced significant gains achievement. CAI method was eigher equal or superior to TAI method. **Moore M, Calvert S. in 2000** studied on the impact of computers on the vocabulary acquisition of young children with autism. In the study the behavioural programme and an educational software programme were compared. The study found that the children with autism were more attentive, greater gain achievement in motivation as well as vocabulary learn by the educational software method through computer than the behavioural programme. So the computer has positive effect in teaching vocabulary skill. **Pekka Rasanen et al in 2009** studied on Computer assisted intervention in teaching skills in kindergarten children. The study consisted a sample of 30 children with low numeracy skills were taken for two treatment groups i.e. first group played a computer game which emphasized numerical comparison and designed to train number skill. Second group played a game which emphasized small sets of exact numerosities by training matching of verbal labels to visual patterns. The study found that both intervention groups improved skills. **Vashisht K. C. & Malik S. in 2001** suggested the advantages of computer technology in special education. A criterion for evaluation of special education software packages is given. Further it was pointed out that computer was a powerful tool to combine approaches and tailor course to meet individual needs. Although children can learn at their own capacity and speed as well as teacher and student both can make self-evaluation of goal achievement.

Results and discussion

The review of literature indicates that researches were conducted on academic areas only. The use of CAI in teaching produces higher achievement that the use of conventional instruction alone. Students learn easily and faster with Computer Assisted Instruction (CAI). The use of CAI leads to positive attitude towards computer, content, quality of instruction and self-learning. Computer Assisted Instruction (CAI) is effective for teaching lower cognitive material than higher cognitive material. No significant difference was seen between achievement of boys & girls while using drill & practice. Favourable results were found in

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social development and self-esteem. The use of CAI is very effective in teaching mathematics. There have been many studies of the efficacy of CAI including a number of meta-analysis. While there have been studies which found CAI to be no more effective but most have found Computer Assisted Instruction (CAI) to be more effective than traditional instruction. It can be seen that there are enough evidences in support of CAI that can be effective method for teaching to children with special needs. Children with mild to severe disabilities may need systematic instruction to acquire personal skills, self-care, numbers, and mathematics and self-help etc. One of the relevent findings about CAI is that it is not the brightest students who benefited most from it but rather the below average pupil who stands to benefit more. The children with special needs can benefit from CAI courseware. The computer provides additional instruction from these students. But still in spite of the growing use of ICT in the world, there is limited research in the area of software development for students with special needs. Only few studies have conducted the use of CAI to teach the academic skills and there is no study using ICT for communication and motor development.

In the review, it was seen that a number of software programme are available to teach the academic skills. But adaptive behaviour, motor development and communication development is also a major area where there is a need to develop software to teach the communication and behaviour skills. Therefore it is hoped that the study will open up a new area where innovation or development of software could give major focus to adaptive behaviour, communication development and motor development to children with special needs. No study was found which develop communication skills through Computer Assisted Instruction (CAI) of mentally challenged persons. The current study is an experimental study based on enhancing communication skills through Computer Assisted Instruction (CAI) for mentally challenged children.

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