Development and Evaluation of Indigenous curriculum

by Ramana Kumari P.v.

RE/RP/01

1.0 Title of the Project: Development and Evaluation of Indigenous curriculum oriented computer based tutor for concept learning in preschool children with special needs.

Area of Research: Special Education & Information Technology

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1.3 Collaborating Institution: NIL

1.4 Total Grants Required: 5.0 lakhs. (Rupees Five Lakhs only)
(in figures and in words)

1.5 Duration of the Project: 1 Year

2.0 Project Summary (Max. 300 words)

The first eight years of schooling covering the period of elementary education plays a vital role in the education of an individual. Elementary education is the most important phase of education. These years lay foundation for the development of personality, attitudes, social confidence, habits, learning skills, and communicating abilities of pupils. The basic skills of 3 R's (Reading, Writing and Arithmetic) are acquired at this stage. The importance of quality of elementary education hardly needs any emphasis. If a child goes through good education at this stage, he will be

adequately prepared to exercise his initiative to overcome difficulties. Computers are the most important technological device used in teaching-learning activities. Computers are used for varied purposes in the classroom. They can be utilized to help a student in all curriculum areas. Computer can play vital role in learning process as it can work with the imagination of students. As a teaching- learning medium computer based instruction (CBI) brings with it several prospective benefits. These include self-paced learning, self-directed learning, exercising of various senses and the ability to represent content in a variety of media. Communication disorders in children not only makes it difficult for them to communicate with other people but also slow down, or even prevent altogether, their learning. The benefits of computer based learning to children with special needs in overcoming these difficulties are well documented. Non availability of CAI matching to our culture is a bottleneck for Indian children with special needs, in availing these benefits.

In light of the above, it is proposed to develop an indigenous curriculum oriented computer based tutor for concept learning in preschool children with special needs. 6 concepts viz. My family, My Body, Things we use, Animals and Birds, Food we eat, My Journey will be selected and story boards for the same will be developed. Later computer based tutor in Kannada Language will be developed based on the story boards. The effectiveness of the computer based tutor will be determined by using pre-experimental research design by selecting 10 children with special needs (5 children with Hearing Impairment and 5 intellectually challenged children) each, for testing in 6 different concepts i.e. a total of 60 children. Pretest will be carried out and later the concept will be taught using computer based tutor followed by posttest. The obtained data will be subjected to appropriate statistical

analysis. It is expected that the outcome of this study will be indigenous computer based tutor which can be extrapolated for other abstract concepts too.

3.0 Introduction

Technology has taken over almost every aspect of our lives - be it personal, social or professional. Even children are not left untouched by the growing craze of the latest gadgets and apps. It all began with smart classes and the apps and gadgets have taken over almost every part of our lives.

Preschool children use on average 7.5 hours per day of entertainment technology (Shujauddin, 2015). Children now rely on technology for the majority of their play. Instructional technology is an integral part of today's learning environment. Several studies have shown that the use of instructional technology positively affects students learning. Instructional technologies which are of maximum benefits to children with special needs are – Computer assisted instructions, Integrated learning systems technology simulations and software that teaches higher order thinking, collaborative network technology and mobile Apps etc.

Computer assisted instruction enhances the knowledge and the expertise in the acquisition of new concepts which is indented to mastery during teaching learning process (Hasselbring, 2000).

With self-paced learning, learners can

- Move at their own pace.
- Repeat some task or review some material again and again.
- Skip a topic and move to the next topic if information is already known.

Self-directed learning helps learners to choose the learning material and the order in which they want to learn.. Computer based educational systems helps in:

➢Administering the pre-test to assess student's capabilities Providing information about a topic in a navigable form

➢Improving student's command over the content by providing repetitive drills and exercises Faster and enjoyable learning using game-based drills Administering post-test to check the student's progress Directing students through a sequence of courseware instructional programs.

➢Record maintenance of scores and progress of the student by the courseware instructor for later use. Recording student scores and progress for later inspection by a

Limitations of conventional/traditional teaching

- Teaching mode is single.
- Teaching process provides very less thinking space for students as it stresses on scheme and completion.
- In the class teaching students are passive listeners..
- Critical thinking skills, the ability to actively apply information gained through experience and reasoning are not encouraged in conventional teaching.
- Individualized interests cannot be taken care.
- The knowledge imparted is restricted due to non availability of resources. Limits the provision of core experience. Students may lose interest as their idea and enthusiasm cannot be fully exerted in class.
- Traditional training inherently places the most value on standards, curriculum and passing tests as opposed to student-focused learning.

Computer based teaching learning systems will overcome these limitations and hence advantageous to children with special needs. To pass on these benefits to them there is a need to build up a computer based tutor in the regional language. The proposed study is an initiative in that direction.

3.1 Definition of the problem: Proposal

The more senses through which one receives information, the easier it is to remember. It is said that, people remember 20% of what they hear, 40% of what they see and hear and 75% of what they see, hear and do. The fact that the computer can exercise various senses and present information in a variety of media can enhance the learning process. Computer based learning systems are proven to overcome many of the limitations of the conventional teaching learning methods. Keeping this in view and considering the non availability of indigenous CAI in regional languages for children with special needs, there is a need to develop and evaluate an indigenous curriculum oriented computer based tutor for concept learning in preschool children.

3.2 Objectives:

Phase – I – To develop story boards for 6 concepts viz. My family, My Body, Things we use, Animals and Birds, Food we eat and My Journey in Kannada.

Phase – II – To develop indigenous computer based tutor for the 6 concepts based on the story board in Kannada and integrating it with the multimedia content and devising reinforcement mechanism.

Phase – III – To evaluate the performance of the developed computer based tutor.

3.3 Review of status of research and development in the subject:

Education is the most essential component for the development of any society. Education has in its own way contributed to the growth of every civilization. From the Gurukula system of ancient India that laid emphasis on rote memory and one to one supervised skill training to the modern day classrooms equipped with the latest gadgets that invoke the experimental and explorative abilities of children, teaching methods and methodologies have changed drastically with time. Computer based teaching devices and methodologies have not only speeded up the process of learning but also have made learning a pleasant and joyous

experience. It has significantly reduced the gap between the speedy learner and the slow learner. Since the time of Skinner's programmed instructions, tasks were broken up into manageable units and can be arranged sequentially according to individual's pace of learning. CBIs have been implanted not only in the training of normal children but also in the training of differently able children for various skills. According to Papert, 1980 technology can teach the same old content in a better way.

Children's thought process, learning abilities, and the way they interact with others can be changed using technology. . In the past decade queries were raised regarding the appropriateness of the use of technology for teaching young children. . According to Clements and Natasi, 1993young children were comfortable and confident in using computers. Studies proved that children could boot the system and could follow pictorial instructions and perform the given task with the given visual cues. ().

Many studies were also carried out for finding out the effectiveness if CBI for teaching children with communication disorders. Bernard-Opitz, Sriram, & Nakhoda-Sapuan, 2001; Bosseler, & Massaro, 2003; Coleman-Martin, Wolff Hellar, Cihak, & Irvine, 2005; Kinney, Vidora, & Stromer, 2003; Moore, & Calvert, 2000; Simpson, Langone, & Ayers, 2004; Williams, Wright, Callaghan, Coughlan, 2002 have studied that computer based instruction can be effectively used for teaching children with autism and other developmental disorders. In fact, current research is a foundation to suggest that CBI is more effective than direct instruction by trained teacher for teaching certain skills. For example, studies by Williams et al. (2002) and Moore and Calvert (2000) showed that children with autism learned significantly more sight words in a cross over design and basic vocabulary skills using CBI than using direct teaching. The attendance of the children was significantly more when the concept was taught using CBI.

Time taken verses the number of words learnt by the children who were taught by CBI showed positive correlation. As studied by Druin & Hendler, 2000; Wood, 2001, it is true for both native, second-language learners and and children with special needs.

CBI not only presents the content in multiple ways viz. text, sound, and pictorial but also provides automated practices, spontaneous feedback and reinforcements (Chun & Plass, 1996). Dubois and Vial (2000), studied that the content is remembered well when the information is provided in multi-sensory modality. It also improved the recall of second-language vocabulary.

3.4 International and national status:

Studies proved that varied types of learners are benefitted with computer-based instruction in school setup. Schiffman, Tobin, & Buchanan, 1984 studied that the benefits of CBI include self-paced learning individual attention, positive reinforcement and incentive with drill-and-practice activities. In order to meet the necessities of todayeducation should be synchronized with developing technology Kacar (2006) . According to National Curriculum Framework (NFC), 2005, technology should be used in educational setups to help the students to grow as an active , inspired, probing and self-controlled individuals According to Baki, 2002, computer based learning is the process of using computers in the education of an individual., (). According to Yigit and Akdeniz, 2003 computer based instruction should be used in making an individual understand the concept as traditionally taught lessons do not meet the requirements of teaching or understanding a concept. It was observed that students gets bored and lose interest if the concepts are taught in traditional method and students showed more interest if the same concept is taught using graphics, animations and audio. (Bodur, 2006). Studies also showed that CBI can be effectively used in teaching curricular subjects. Capper and Copple 1985; Kulik, Kulik, and Bangert Drowns 1985,

Roblyer, et al. 1988; Rodriguez and Rodriguez 1986 studied that use of CBI is most effective in teaching science and foreign languages followed by mathematics, reading, language arts and English as a Second Language.

3.5 Importance of the proposed project in the context of current status:

Past research at both national and international levels has proven that CAI has positive influence on language, arts and academic development in preschool children with special needs. However, there are not many indigenous curriculum based CAIs and hence children with special needs in our country are deprived from its benefits. Our special educators are also finding it difficult to adapt the available CAI to our children due to the cultural differences. Hence the developed indigenous curriculum oriented computer based tutor for concept learning will help preschool children with special needs to comprehend the concepts in a better way.

4.0 Work Plan

4.1 Method

The present study will be a pre-experimental research to develop and evaluate an indigenous curriculum oriented computer based tutor for concept learning in preschool children with special needs.

The method will be discussed phase wise:

Phase – I – In phase I the research assistant will be developing story boards for 6 concepts viz. My family, My Body, Things we use, Animals and Birds, Food we eat, My Journey in Kannada language as per the flow chart shown in figure 1.

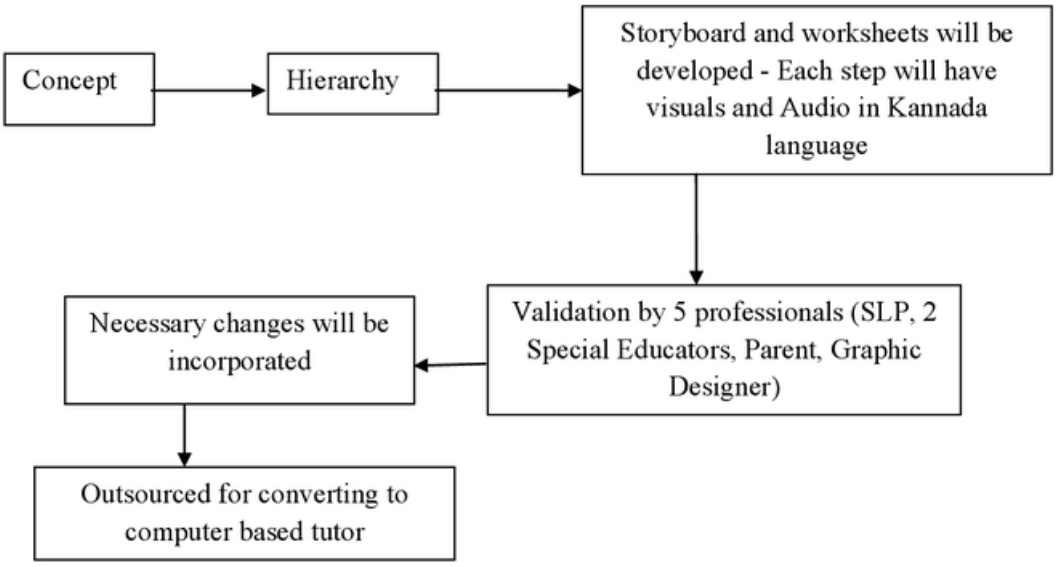

Figure 1: Flowchart of developing story boards for each concept

Phase – II – The storyboards developed will be transformed to a computer based tutor (in Kannada Language) as shown in figure 2 below.

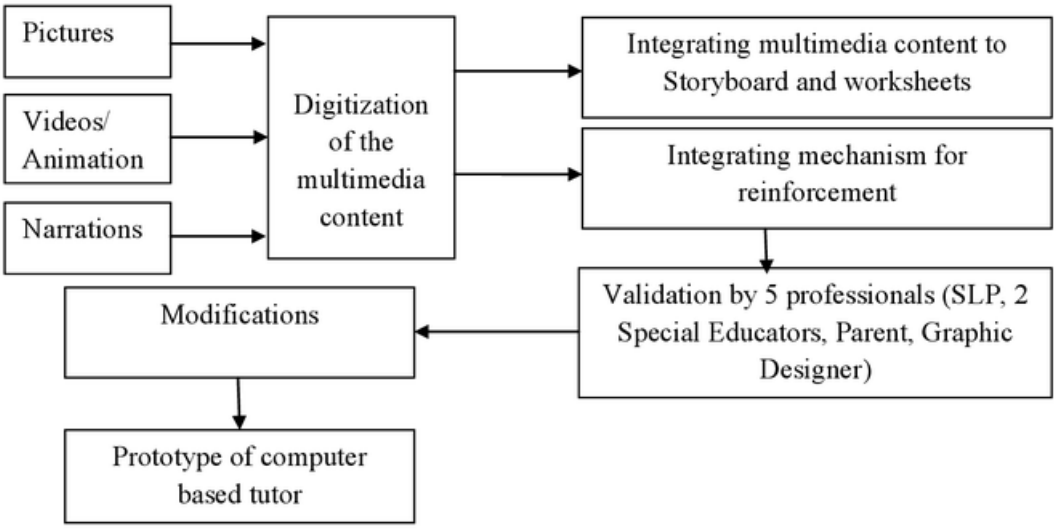

Figure 2: Flowchart of developing computer based tutor

Phase – III – 60 children from Kannada groups based on the selection criteria will be selected.

Subjects / Participants:

Kannada group Preschool Children with Hearing Impairment	5 Participants * 6 concepts = 30
Kannada group Preschool Children with Mild to Moderate Intellectual Disability	5 Participants * 6 concepts = 30
Total	60 participants

Pre-test will be administered based on the content and then training will be carried out using indigenous curriculum oriented computer based tutor that was developed. Later post test will be administered.

Material:

Two types of materials will be developed:

- Story boards and computer based tutor on the 6 concepts viz. My family, My Body, Things we use, Animals and Birds, Food we eat, My Journey.
- Test material for evaluating pre- and post- interventional knowledge of child-participants.

Analyses:

The collected data will be analyzed both quantitatively and qualitatively. The quantitative analysis will aim at comparing the pre-test and post-test scores. The qualitative analysis will aim at comparing the improvement in percentage of all the subjects in each concept.

4. Time schedule of activities giving milestones

Sl. No.	Months ---> / Activity ↓	0--2	2--4	4--6	6--8	8--10	10--12
1	Story boards preparation						
2	Validation of story boards preparation						
3	Developing the prototype of computer based tutor						
4	Field trial of computer based tutor						
5	Compilation of field trial data and report preparation						

5.0 Budget summary :

Sl. No.	Particulars	Budget (In Rs)
1.	Personnel- Project Officer* (1 post Rs. 25,500 x12 months)	3,06,000=00
2.	Developing the software with interactive features, animations and multimedia integration (out sourcing)	1,80,000=00
3	Consumables	14,000=00
	Total	5,00,000=00

*One post of a project officer with B.S.Ed / M.Ed-Special Education qualification or equivalent) with fluency in reading and writing Kannada and having sound knowledge computers and having creative writing ability.

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6.0 Implications of the results of the study

The outcome of this research might be helpful in –

- Inspiring special educators to use CBI in the classroom for promoting better teaching-learning practices.
- Inspiring preschool children with special needs to learn the concepts in a play way method
- Guide teachers at different levels of education in developing CBIs for abstract concepts in subjects like mathematics, environmental science and language .
- CBI can be effectively used in inclusive setups for teaching the concepts, as children learn faster with innovative techniques. Inspiring teachers to develop CBIs in Indian languages.

7.0 Utilization of results of the study :

The developed computer based tutor can be used for training preschool children in learning the concepts. The developed strategy can be extrapolated to other concepts in other disciplines as well.

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