Effect of Computer Assisted Instructions to Enhance Literacy Skills among Students with Learning Difficulties at Secondary Level

SHANU H S

21PED006

A THESIS SUBMITTED TO

AVINASHILINGAM INSTITUTE FOR HOME SCIENCE AND HIGHER EDUCATION FOR WOMEN

COIMBATORE- 641043.

In Partial Fulfilment of the Requirements for the Degree of

MASTER OF EDUCATION

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UNDER THE GUIDANCE OF
DR. R. VAIJAYANTHI

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CERTIFIED AS BONAFIDE RESEARCH WORK

S. S. M 16/5/23
Signature of the Head of the Department

16/5/23
Signature of the Supervisor

DECLARATION

I, **SHANU H S**, hereby declare that the thesis entitled **"Effect of Computer Assisted Instructions to Enhance Literacy Skills among Students with Learning Difficulties at Secondary Level"** submitted to Avinashilingam Institute for Home Science and a Higher Education for Women, Coimbatore, in partial fulfillment of the requirements for the award of the Degree of **Master of Education,** is a record of original and independent research work done by me during the period under the supervision and guidance of **Dr.R.VAIJAYANTHI, Assistant Professor (SG), Department of Education** Professor, Department of Education, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, and it has not formed the basis for the award of any Degree/ Diploma/ Associateship/ Fellowship or other similar title to any candidate of this or any other University.

Signature of the Supervisor

Signature of the Candidate

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CHAPTER I

INTRODUCTION

INTRODUCTION

> ***"Technology in the information revolution has provided many unique benefits to instructional programs. Although traditional ways of instruction are widely accepted in teaching and learning environments, some educational institutions have started to implement computer technology as an instructional approach".*** **- McKethan (2001)**

Education plays a crucial role in the society because it disseminates knowledge, provides necessary skills and helps in forming certain attitudes. Computer is a machine which helps in computing and exploring the knowledge at just one click. The use of computer has helped enormously to overcome the drawbacks of commonly used traditional method of teaching. "Computer plays an important role in different fields of education. Now a days, Government provides good Infrastructural facilities like Smart Board, Computers, LCD Projector under the scheme of Information and Communication Technology in Schools (ICT in Schools) during the XI Five year Plan between 2007-2012 to promote ICT based learning." **MHRD (2010).**

Highlighting the significance of technology in the field of education, NPE 1986 has emphasized the relevance of Educational technology to enhance the quality of education at all levels. "Computers have become important and ubiquitous tools; a minimal exposure to computers and training in their use will form part of professional education" **NPE (1986).**

Concept of Learning

"Learning as a process which brings progressive change in behaviour that enables an individual to attain his goals and to satisfy his interests**.** Learning must focus on enhancing students' 4C abilities, which stand for communication, critical thinking, creative thinking, and collaboration or are known as the 21st-century learning skills, in this industry 4.0 revolution in addition to curriculum goals. These abilities are now essential for dealing with globalisation, anticipating rapid societal change, and resolving everyday issues. **Crow and Crow (1973)**

Concept of Learning Difficulties

Learning difficulties found their origin dates back to 1896. Poor learning of the children in school is the major consequence of learning difficulty among children and demands immediate concern and attention of the Government.

A sizable percentage of student population at school level consist children with learning difficulties, i.e. difficulties in writing, reading, arithmetic and spellings. About 15 to 20 percent of school population experiences these specific learning difficulties**. (Reddy, Ramar &Kusuma, 2004).**

The term Learning Difficulty emerged from a need to identify and serve a group of children who are failing in school, but it did not fit in the existing categories of exceptional children. This group of children, however, exhibits a broad variety of problem behaviour and requires the services of professionals from a number of disciplines **(Reid, 1981).**

Learning Difficulty and learning Disability

Every difficulty cannot be categorized as a learning disability.

Learning difficulty: If a person's ability to learn, ability to converse with others and ability to get along with others is affected by a specific learning or emotional problem, then that particular problem is termed as learning difficulty. In general terms learning difficulties affect one's brain's capability to obtain, analyze, interpret and accumulate information.

Learning disability: It is a considerable lifelong situation that develops before adulthood affects development and leads to help being required to: learn skills, understand information and handle independently.

LITERACY

Literacy means the ability to read, write and do simple arithmetic. According to Chambers English dictionary, (2003) the basic definition of literacy is "the condition of being literate".

In education parlance, "Basic Literacy" means the classic or traditional literacies of learning how to read, to write and to perform numeric calculations. It is measured by the Government of India, in the ability to read 40 words per minute, write 20 words per minute and do 2-digit arithmetic (India: Reference Annual, 2016). Literacy involves process skills which are applied for a particular purpose. Reading and writing are skills which are used for understanding, learning and communication. Literacy skills provide the tools for learning concepts and communicating ideas. Information skills are process skills which are applied in response to a need for information to answer a question or solve a problem. (Kuhlthau, 1987).

The reading skill represents the third level of the hierarchical model for language development containing five levels: Receptive language, expressive language, reading, writing, and employing written and verbal language in daily life (Al-Khasawneh, 2020).Reading is a psychological, mental process that entails the ability to transform written symbols into verbal symbols. It is one of the basic to facilitate reading, and to facilitate reading Comprehension. Children should be trained to identify and recognize words learned to the level where they can visually recognize them. Visual words are common words the reader can realize at first glance without the need for analyzing them to the syllabus of sounds they constitute. Children unable to form many visual words will never be good readers. They will be limited to combining words in basic thinking units to reach reading fluency and comprehension. Furthermore, they will face severe problems recognizing new or uncommon words for him (Khasawneh & Al Khawaldeh, 2018).

As stated in the Report of the National Reading Panel (2000), phonics is one of the critical components of balanced reading instruction, along with phonological awareness, vocabulary, fluency, and comprehension. It can be noticed, then, that comprehension is essential to reading. With comprehension, reading can be described as a mental process. Reading comprehension is not an innate ability as it is not an easily facilitated skill ending when the reader can recognize and say the written symbols. Indeed, it is a complex process falling in variant levels, requires mental abilities and potentials, needs practice and drill, and uses different thinking, explanation, analysis, critique, and contrasting skills.

Writing is one of the fundamental skills taught in schools. What starts with introducing the English language to alphabets and numbers advances to sentence formation, grammar, vocabulary, etc. Each student should acquire writing skills. It is a form of communication necessary for education and any profession. Writing skill will enhance the communication abilities. Knowledge and thinking are filtered to the most essential information. It conveys crucial information to other people. Writing aims to communicate with the reader or listeners one at a time, not to speak 1,000 words at once. Writing well benefits in several ways. It helps to achieve the objectives and advance the career while opening new doors. One can express themselves better, become more concise and clear, and stand out from the crowd with the help of good writing skills. Good writing skills enhance focus and help students develop eloquence. This is a quality that sticks with them for life, and hence, it is best to acquire it early in school.

In this century, being able to solve problems effectively has become crucial (Ince, 2018). According to Kadir et al. (2013), problem- solving skills are mental aptitudes that call for higher-order thinking to develop suitable solutions for common problems. One subject that involves problem-solving abilities is mathematics. The National Council of Teachers of Mathematics (NCTM) stated that one of the fundamental skills that students must master is problem-solving. There are many different pedagogical models or methods that can be applied to help students improve their problem-solving abilities. PBL, or problem-based learning, is the most popular.PBL is a student-centered learning approach that uses problems as a prompt to help students achieve their learning goals (Hmelo-Silver, 2004). We can say that the problems that teachers promote will cause the learning process to proceed. However, the difficulty of the problem that teachers assign determines whether or not learning takes place.

EFFECTIVENESS OF CAI IN TEACHING – LEARNING PROCESS

Computer- Assisted Instruction (CAI) is one of the methods which is used for giving abstract concepts. It supports and shares the cognitive process by reducing the memory load and time of the students spend on the computation work. It also provides exercises to do lot and lot of practice. In CAI, learners can learn at their own pace and spend as much as time as they need. It makes learning and teaching more encouraging and interesting for the students.

Need for the study

Classroom teaching and learning have become synonymous with the concept of smart classrooms.There is an excellent transition from conventional teaching and learning methods to innovative approaches in the smart classroom, gaining popularity and thrust day by day. When teachers use technology as a criticalpart of the inquiry-oriented teaching - learning process, the challenges they face include: how to use technology applications, using adapting and designing technology-enhancing curricula to meet student needs, expanding content knowledge, taking on new roles and responding to individual student needs through e- resources.

In today's competitive world the child is required to possess the skill sets, which beyond subject knowledge and require concentration power of assimilation and relation. Although instructional technology has many uses and advantages, they all have one common goal: to produce practical and exciting learning experiences. And numerous applications of educational technology have succeeded in achieving this objective. Most experts concur that instructional technology has many advantages for the educational process, including better information access, more opportunities for collaboration, and a better ability to cater to the needs of various learners. One main reason to adapt Computer Based Instructions is that, its usage in an overcrowded classroom it supports both the teacher and the student. Especially it act as a remedy to teach the main literacy skills like reading, writing, and problem solving to provide individual attention by the teacher to the students. Tech literacy is becomingincreasingly crucial as the modern world becomes more digital. Teachers who effectively integrate technology into the classroom can help students become successful citizens of the digital era. Hence, the current study was undertaken as an experimental method to determine the efficacy of CAI to Enhance Literacy Skills among students with learning difficulties at the secondary level.

Statement of the Problem

The selected topic for the study is "Effect of Computer Assisted Instructions to Enhance Literacy Skills among Students with Learning Difficulties at Secondary Level".

Operational Definition of Key terms used in the study

The terms used in the study are as follows:

1. EFFECT

A modifiable connection between a stimulus and response **(Gupta, 1995).** In the present study effect means the result obtained as a result of implementing the instructional package among students learning difficulties.

2. COMPUTER ASSISTED INSTRUCTION (CAI)

"Computer Assisted Instruction (CAI) is a program of instructional material presented by means of a computer or computer systems. Drill and practice software is generally called Computer-Assisted Instruction. **JURICH & COTTON (2001)**

"Use of computer to assist in the presentation of instructional material to a student to monitor learning progress or to select additional instructional material in accordance with the needs of individual learner." **SINGH (1997)**

4. LITERACY SKILLS (LS)

In the present context refers to all the skills required for developing the 3Rs' in reading, writing, and arithmetic concerning the acquisition of vocabulary, spelling, and comprehension in English, Tamil and computation skills that would enhance the student's performance in academics.

5. READING SKILLS (RS)

"Reading is a process that is carried and used by readers who want to get the message delivered by the author through the medium of words or written language" **(Tarigan (1990:7) in Jaenal 2010)**

6. WRITING SKILLS (WS)

Writing skills are all about having adequate knowledge and abilities to express one's thoughts and ideas inwritten words. Good writing skills allow communicators to clearly communicate their message to as far larger audience than other communication mediums, like face-to-face or telephone conversations.

7. ARITHMETIC SKILLS (AS)

The area of mathematics known as arithmetic deals with the study of numbers and the various operations that can be performed on them. Addition, subtraction, multiplication, and division are the fundamental mathematical operations.

8. SECONDARY SCHOOL STUDENTS

"Secondary School Students are those who are studying in schools between the age group of 11 years to 16 years." For the present study, the students' age group of 11-16 years and class VI class were taken up, **Concise Oxford Dictionary (2011)**

9. LEARNING DIFFICULTY

"Is a disorder in one or more basic psychological processes involved in understanding or in using written or spoken language which may evident itself in an imperfect ability to read, write, think, listen, speak, and spell or to solve mathematical problems".

The Federal Register (1977)

Objectives of the study

- To find the knowledge of literacy skills among VI standard students with learning difficulties at secondary level.
- To study the learning difficulties in Tamil, English and Mathematics of VI standard students.
- To analyze the content of Tamil, English and Mathematics (Term 1) textbook prescribed for VI std school students.
- To prepare the Computer Assisted Instruction Package and provide intervention to VI standard students.
- To determine the effectiveness of the Computer Assisted Instruction Package in Enhancing Literacy skills among students with learning difficulties.
- To determine the effectiveness of the Computer Assisted Instruction Package in Enhancing Literacy skills among students with respect to gender and locality.
- To orient the teachers and students about the use of Computer Assisted package to Enhance Literacy Skills.

Hypotheses

- ► There is no significant difference in the Pre-test & Post- test score of students on intervention in Tamil with respect to Gender and locality
- ► There is no significant difference in the Pre-test & Post- test score of students on intervention in Englishwith respect to Gender and locality
- ► There is no significant difference in the Pre-test & Post- test score of students on intervention in Mathematicswith respect to Gender and locality
- ► There is no significant difference in the Pre-test & Post- test score of students on intervention in Mathematicsboth in general and computational with respect to Gender and locality

Limitations of the study

Study limitations are the constraints placed on the ability to generalize from the results, to describe applications further to practice, and related to the utility of findings that are the result of how the investigator initially chose to design the study or the method used to establish internal and external validity of the outcome of unanticipated challenges that emerged during the study.

However, the following limitations were noticed while conducting the present study.

- Only girls of VI standard were selected for the study.
- Existed sample size comprised of 30 students (experimental group) is confined to Govt-aided schools & only in Coimbatore.

Despite the above-cited limitations, adequate care was taken to select the samples, construct the tools, gatherreliable data, and apply analysis and interpretations.

Scope of the study

- ❖ The study is expected to benefit the VI standard school students to develop Computer Assisted Instructional literacy skills.
- ❖ This study could be helpful for the administrators, policy makers to implement modification in theexisting curriculum techniques & facilities according to the needs of the students.
- ❖ The CAI materials may help the students & tool to learn and impact Tamil, English and Mathematicsconcepts in an effective manner.
- ❖ The study will also help the teachers to analyse the CAI approaches to be used for teaching Tamil,English and Mathematics concepts.
- ❖ Finally the purpose of this study is to know how far the CAI package was found to be effectivecatering needs of the students.

Organization of the study

A research report is a well-crafted document that outlines a systematic investigation's processes,data, and findings. The research study on **" Effect of Computer Assisted Instructions to Enhance Literacy Skills among Studentswith Learning Difficulties at Secondary level"** is reported in five chapters as per the details below.

Chapter I - consists of the problem, purpose, hypotheses or research questions, definitions, theoreticalframework, and significance of the study.

Chapter II - consists of a review of the literature.

Chapter III - consists of the methodology: sample, setting, design, data analysis methods, and ethical concerns.

Chapter IV - consists of the results of the data analysis.

Chapter V - consists of a discussion of results, conclusions, implications, and recommended future studies.

REVIEW OF LITERATURE

CHAPTER II

REVIEW OF LITERATURE

INTRODUCTION

A literature review is a comprehensive summary of previous research on a topic. The literature review surveys scholarly articles, books, and other sources relevant to a particular area of research. The review should enumerate, describe, summarize, objectively evaluate and clarify this previous research. It should give a theoretical base for the research and help you (the author) determine the nature of your research. It acknowledges the work of previous researchers, and in so doing, assures the reader that the work has been well conceived.

It also creates a "landscape" for the reader, giving her or him a full understanding of the developments in the field. This landscape informs the reader that the author has indeed assimilated all (or the vast majority of) previous, significant works in the field into her or his research.

The literature pertaining to the study on **"Effect of computer assisted instructions to enhanceliteracy skills among students with learning difficulties at secondary level"** is reviewed in this chapter.

1. Concept of literacy Skills

Speaking, listening, reading, and writing are all aspects of literacy. They also include knowledge of print, the relationship between letters and sounds, and language-specific sounds. Spelling, comprehension, and vocabulary are additional literacy skills.

Understanding the meaning of written symbols and letters is the process of reading. The development of essential reading literacy skills involves many different literacy skills. A child's reading ability, or how well they possess the reading and comprehension skills, is influenced by their reading skills. Children learn and practise a variety of reading skills throughout their primary education and beyond. These literacy abilities in reading include:

- Decoding
- Phonemic awareness
- Reading fluency
- Reading comprehension

Writing involves transcription (spelling and handwriting) and composition (articulating and structuring ideas in speech before writing). Similarly to reading literacy skills, there are a lot of different writing literacy skills that come together to form written literacy.

2. Concept of CAI

Using CAI as a supplement to conventional instruction produces higher achievement than using traditional education alone. Research needs to be more conclusive regarding the comparative effectiveness of conventional instruction and CAI alone.

Computer-based education (CAI and other computer applications) produce higher achievement than conventional instruction alone. Student use of word processors to develop writing skills leads to higher-quality written work than other writing methods (paper and pencil, conventional typewriters).Students learn material faster with CAI than with conventional instruction alone. Students retain what they have learned better with CAI than with conventional instruction alone.

Using CAI leads to positive attitudes toward computers, course content, and quality of instruction, the school in general, and self-as-learner than conventional instruction alone. CAI is associatedwith other beneficial outcomes, including a more significant internal locus of control, school attendance, motivation/time-on-task, and student-student cooperation and collaboration than conventional instructionalone. CAI is more beneficial for younger students than older ones. CAI is more beneficial with lower- achieving students than with higher-achieving ones. Economically disadvantaged students benefit more from CAI than students from higher socioeconomic backgrounds.

CAI is more effective for teaching lower-cognitive material than higher-cognitive material. Most disabled students, including learning disabled, mentally retarded, hearing impaired, and emotionallydisturbed, and language disordered, achieve higher levels with CAI than with conventional instruction alone. Students' fondness for CAI activities centers around the immediate, objective, and positive feedback these activities provide. CAI activities are at least as cost-effective as--and sometimes more cost-effectivethan-- other instructional methods, such as teacher-directed instruction and tutoring.

3. Goals and objectives of CAI

The main objective of programmed instruction is to provide individualized instruction to fulfillthe unique needs of the individual pupil. To achieve this objective, some efficient device is required. Thisdevice should be flexible, and it can store vast amounts of organized information. The device may help aperson to use some selected part of the stored information. A computer fulfills all these requirements. It can hold collected information and process the info suiting the needs of the individual learner. In short, CAI covers the entire educational system by proving itself a valuable tool in teaching various subjects.

4. Importance of CAI in Schools

Educational Technology has also significantly contributed to the rise in the popularity of CAI tools. Many Educational Technology companies stepped up to demonstrate the value of these tools whenCAI-based programs were not frequently used in the education sector. The entire industry gradually beganto recognize the beneficial effects it might have on students' learning experiences and made the necessary adjustments. All educational institutions must closely monitor the same as technology advances. It will enable them to incorporate these programs into their regular lessons and increase the student's interest in learning new things. Because technology significantly enhances the educational process, learners' future is bright.

5. Strategies for teachers in using CAI

- Interactive and can illustrate a concept through attractive animation, sound, and demonstration. Allow students to progress at their own pace and work individually or problem-solve in a group.
- Provide immediate feedback, letting students know whether their answer is correct. If the solutionneeds to be more accurate, the program shows students how to answer the question correctly.
- Offer a different type of activity and a change of pace from teacher-led or group instruction.
- Improve instruction for students with disabilities because students receive immediate feedback anddo not continue to practice the wrong skills.
- Capture the students' attention because the programs are interactive and engage their spirit ofcompetitiveness to increase their scores.
- Move at the student's pace and usually do not advance until they have mastered the skill.
- Provide differentiated lessons to challenge at-risk, average, or gifted students.

6. Learning Difficulties

Learning disabled students might struggle with reading, writing, maths, or paying attention in class. They could also display poor social and emotional health signs, such as disengagement. A neurodevelopmental condition that affects a student's behavior and information processing can lead to learning difficulty. Environmental or physical issues that interfere with learning may also be to blame. Materials for instruction, support, and professional development to assist you in enhancing classroom numeracy outcomes.

Related studies carried out in India:

The studies related to this research are given below:

- **Studies related to Reading**
- **Studies related to Writing**
- **Studies related to English**
- **Studies related to Math**
- **Studies related to Science**
- **Studies related to Learning difficulties**

❖ **Studies related to Reading**

Crews (2003) conducted a case study investigating the **"Effectiveness of a CAI reading tutorial tohelp poor readers".** The 13 participating students were fourth and fifth grade students with poor reading abilities as determined by the independent assessments and observations of their homeroom teachers. The multimedia CAI program supported the active cognitive participation of the learner, delivered multi- sensory instruction and provided feedback timely. The instruction was individualized and self-paced. Results of pre-post reading comprehensive tests and interviews indicated that poor readers completing the CAI tutorial significantly improved their reading skills and their teachers felt that using the CAI tutorial helped the students become better reader.

Hsu (1994) conducted a study entitled **"Computer Assisted Language Learning(CALL) to see the effect of Elementary Language Students (ELS) use of interactional modification on listening comprehension"**. The purpose of this study was to describe ESL students' moves (i.e., based on the principles of classroom discourse analysis), requesting modifications (i.e., requesting dictionary, aural repetition, or text reinforcement) on the input they received while working on this program which confronts them with new linguistic material and to describe the relationship between those interactional computerizedmodifications which ESL students request and their listening comprehension scores. Data were collected from 15 elementary second language students by using a single group pre-test research design. The findings revealed that second language students used the tools made available by the computer technology to make input comprehensible, computerized modification and language acquisition.

Dellario (1987) conducted a study on the **"Effects of Computer Assisted Instruction in Basic Skills Courses on High-Risk Ninth Grade Students".** The purpose of this research was to determine the effects of Computer Assisted Instruction (CAI) in basic skills of English and Mathematics on high-risk ninth grade students. Utilizing an ex-post facto design, the study was undertaken to determine if CAI courses make any measurable difference in students' academic achievement. The study also examined three nonacademic concerns related to the school-imposed, high-risk label carried by these students: attendance, student behavior, and dropouts. Data were collected from school personnel on 384 ninth grade students enrolled in four high schools of two urban school districts. The instruments utilized in this study included the Metropolitan Achievement Test, the Nelson Reading Test, the Stanford Diagnostic Mathematics Test, and the California Achievement Test. The finding of the study contains an important information for educational planners and future researchers. By knowing some academic areas are meeting with success and some nonacademic areas are also positively influenced, better determinations can be made about future uses of computer assisted instruction in academic environments.

Dewberry (1987) conducted a study on an **"Exploration of linguistic pragmatics describing an exemplary model for computer assisted instruction in English as a second language with pragmatics as content".** This study examines linguistic pragmatic theory, studying the terminology and organizing the concepts into a coherent whole. The study then analyzed both the development and pilot testing of a Computer Assisted Language Learning (CALL) module for teaching pragmatics in English as a second language (ESL).Passive voice in discourse was selected as the content. Thus, this study clarified pragmatic theory, and creates an exemplary model of Computer Assisted Instruction with pragmatics as content. The study found pragmatics warrants a modified systems approach for the design and development of Computer Assisted Instruction (CAI).

❖ **Studies related to Writing**

Dzekoe (2013) conducted a study on **"Facilitating revision in the English as a second language (ESL) composition classroom through Computer-Based Multimodal Composing Activities (CBMCA)".** It analyzed how 22 students used the CBMCA to facilitate self-revision as they composed academic papers. Data collection and analysis were based on a descriptive case study with embedded quantitative data and an integrated theoretical framework of Multimodality (Kress &Van Leeuwen, 2001), Noticing Hypothesis (Schmidt, 1990), and Multidimensional Model of Revision (Stevenson, Schoonen, & Glopper, 2006). Data included surveys, students' revision history, posters, listening activity, integration of visual and written texts, reflections, stimulated recall interviews, final written drafts and scores on those drafts. The findings indicate that the CBMCA had the potential to facilitate self-revision in the L2 writing classroom; and that there was the need for L2 writing researchers to re-conceptualize" draft", to focus on revision history rather than between-draft revisions; and pay equal attention to pre-text and point-of- inscription revisions.

Galvis (2007) conducted a study entitled **"Computer- Assisted Instruction (CAI)as a teaching toolfor occupational therapy education: A guide to understand CAI design and effectiveness".** The primarypurpose of the study was to compare the effects of CAI versus traditional teaching methods on occupationaltherapy students. To explore the topic, three consecutive and inter-related studies were conducted. The resultof this research could assist occupation therapy and other allied health educators to understand the advantages of CAI materials. In its analysis researcher found that the CAI was effective compared to traditional classroom lecture to teach practical skills and theoretical knowledge. It was also found that CAI could provide faster instruction under learner-centered training.

❖ **Studies related to English**

Babitha (2015) conducted a study on **"Development of a self-instructional package on basic grammar in English for upper primary school pupils"**. It was intended to develop a Self-Instructional Package (SIP) on basic grammar in English for upper primary school pupils. It was also intended to test the efficacy of the SIP by comparing the achievements of experimental and control groups with respect to the levels of cognition namely; knowledge, understanding and application. The sample selected for the experimental study consisted of sixty pupils of seventh standard. The sample was divided into two homogeneous groups. The parametric t-test has been employed to compare the achievements of experimental and control groups. The findings showed that the experimental group exposed to the Self- Instructional Package was significantly higher in achievement than the control group learned through conventional classroom teaching. The same results were observed in the case of boys and girls treated separately. The pupil's scores differed maximum in the case of cognitive functioning at the application level.This testified beyond doubt that the Self-Instructional package is most effective at the application level of cognition.

Patel (2009) investigated on **"Development and implementation of CAI to teach English grammar to Std. VIII students in different modes".** The effectiveness of the CAI was studied in terms ofachievement of Std. VIII students in English Grammar and reactions of the students about the developed CAI. Two schools were selected purposively. Students of Kelvani School were treated as the Control group and students of Bright day school were treated as the experimental group. The required data were collected withthe help of pre-test, post-test and reaction scale which were constructed by the researcher. ANOVA was usedfor data analysis. The findings of the study showed the higher achievement of the students in English Grammar taught through CAI than that of the students taught through traditional method. And from the three modes of the presentation teaching through CAI with discussion was found significantly effective in comparison with the other two modes.

Badiyani (2008) conducted a study on **"Development and comparison of the effectiveness of Computer Assisted Eng lish Language Learning (CAsLL) package and Computer Aided English Language Learning (CAiLL) package"**. The objective of the study was to try-out and study the comparative effectiveness of both of these packages viz. CAiLL and CAsLL respectively. The population ofthe study comprised of computer acquainted students studying in Std. VIII of Gujarati medium schools of Gujarat State. Total 282 students of Std. VIII from four schools were selected as sample. This was an experimental study based on 'Three equivalent groups only posttest design'. In order to measure the opinions of the students towards the CAiLL and CAsLL Packages, the opinionnaire developed by Ambasana (2002) was adapted. The data obtained were analyzed by using statistical techniques like one-way ANOVA, Tuckeytest and Chi-square technique. The findings showed that both the packages were found effective in raising students' achievement in topic 'Action Verbs' in English grammar. The comparative study of both the packages showed that CAsLL Package was more effective than the CAiLL Package in terms of the achievement of the students. The CAiLL Package and the CAsLL Package were also effective in evoking positive reactions towards the use of them in learning English grammar especially 'Action Verbs'.

Beaird (2007) experimented a study entitled **"The effects of computer-assisted language learningon English language learners with and without disabilities in an elementary school setting".** The purpose of the study was to investigate the effects of the English Language Learners Instructional System (ELLIS) on oral, written and reading achievement among students. Additionally, levels of teacher satisfaction with computer-assisted language learning (CALL) and the use of ELLIS were assessed.Participant were 78 third, fourth and fifth grade students with and without disabilities enrolled in a public elementary school. They were randomly assigned to one of three groups. Data were collected to answer eightresearch questions related to the effectiveness of the ELLIS program. Data were analysed quantitatively as well as qualitatively with ANCOVA. The study revealed that the students with disabilities who received instruction using the ELLIS program performed similarly to the students with disabilities who did not receive

instruction using ELLIS program in oral language, written language and reading achievement. Paired instruction using the ELLIS software program had similar effects on student performance as individual instruction using the ELLIS software program. And results from the open-ended interview revealed high levels of teacher satisfaction with the ELLIS software program.

Panchal (2006) conducted a study on **"Development and Tryout of Self-Learning Materials in English subject on the unit of 'Active and Passive Voice' for the Students of Standard-XII".** The studyaimed at comparing the mean achievement scores of the students on simple tense, continuous tense, perfect tense, simple modal auxiliaries, perfect modal auxiliaries, infinitive, participle, causal construction, imperative sentence and active and passive voice on pre-test and post-test. To compare the mean gain scoresof experimental and control groups, a sample of 192 students had been drawn using compatible sampling techniques. Experimental Group Control Group pre-test post-test design as well as, single group pretest post-test design had been suitably employed for the Study. The Self-Learning Material on the topic of Active andPassive had been developed. Desai Verbal and Non-Verbal Group Intelligence Test, the Sub-Criterion Tests,Main Criterion Test, and Opinionnaire constructed by the investigator were used as the tools data analysis. The finding showed that grammar through self-learning material as evident through the pre-test and post-test status through mean achievement on respective sub-criterion tests. There was a significant effect of the interaction of stream and area on the mean scores on main criterion test at post-test stages. The students had favorably opined on the self-learning material.

Sakhiya (2006) observed a study on **"Effectiveness of Work-card and Programmed Learning as Self-learning techniques with reference to teaching of English grammar".** It was intended to prepare thework card material and PLM on the three units of English grammar like Active and Passive Voice, Tenses and Clauses. Investigator also prepared a teacher made test to study the effectiveness with reference to achievement level. A sample of 294 students of Std. IX studying in two Gujarati medium schools of Rajkotcity was selected purposively. The study was based on Experimental design. T-test and other relevant statistical techniques were used for analysis of the data.

The study revealed that in teaching of English grammar, the work card material was more effective than the programmed learning method. And the programmed learning method was more effective than the lecture method for the boy s having high achievement level in English.

Acharya (2005) studied **"The effectiveness of games, work-card and self-instructional material onEnglish language learning"**. It was intended to compare the effectiveness of games, work card and self- instructional material in terms of students and their opinions. A total of 146 students studying in std. IX of Gujarati Medium Schools were selected as sample. The data were collected in terms of achievement score and opinions of the students by using a teacher made achievement test and an opinionnaire. Under thisexperimental study, the data were analyzed and interpreted by using T-test, F-test and chi-square technique.The findings showed that there was no significant variation in the achievement of the students of the three groups studied through games, work card and self-learning material but the replication of games approach proved better than that of other two approaches. Further students favoured the learning experiences providedby the games approach and students also liked work cards and self-instructional material approaches for ELT.

Rathod (2005) conducted a study on **"Development and Implementation of an Information Technology Based Instructional Package for English Grammar to Gujarati medium students of Standard VIII of Jamnagar City".** The objectives of the study were to develop and study the effectivenessof an IT based instructional package for teaching English Grammar in terms of the achievement of the studentsand their reactions on the developed instructional package. The development of the IT based instructional package was done through Microsoftpower point. 100 students were randomly selected from standard VIII as the sample. These students were further divided into Experimental and Control groups. The developed IT based instructional package was found to be effective for teaching English Grammar because there was a significant difference in the gain mean scores of the experimental group and control group. The students were found having positive reactionstowards the developed IT based instruction.

Rathwa (2007) conducted a study entitled, **"Development and Implementation of Multimedia Package for teaching Gujarati Subject".** Objectives of this study were to develop and study the effectiveness of a multimedia package in Gujarati subject for std. VII students. And to compare the achievement of the students in the unit test conducted for experimental and control groups. Achievement testand reaction scale prepared by the investigator were used to collect the data. Study revealed that developed multimedia package was found to be effective and had significant effect on achievement of experimental group in comparison with the control group. It was observed through opinionnaire that multimedia packagewas effective and students enjoyed learning through it.

Chien-Yu (2004) described the "**Effectiveness of implementing Computer-Assisted Language Learning technology in the English for specific purposes training program".** An increasing number of private and public organizations and educational institutions are incorporating Computer-Assisted LanguageLearning (CALL) technology in either their traditional classroom setting or online English for Specific Purposes (ESP) training programs. In order to determine the "effectiveness" of a corporate ESP training program, the approach for this study was to evaluate trainees' on pretest and posttest related to the ESP training program. Under this 'One group pretest and posttest design' based study, a group of 18Chinese adult male trainees enrolled in a flight academy's Aviation English training program that implemented with online learning CALL technology blended with an instructor, in central Florida. In addition, a survey was done to collect data on students' basic information, attitudes toward learning English with CALL technology, motivations for study English and their perceptions of CALL technology as facilitating interactions among students. The study found that within two months of the implementation of the blended learning in the Aviation English training program, participants had shown significant improvement in their test scores. Participants in the study generally had positive attitudes toward learning English with CALL, before and aftertwo months of the Aviation English training program. They also had positive perceptions for CALL technology in facilitating interactions in the classroom, before and after the training program.

Suwana (2004) studied the **"Effectiveness of Computer Assisted Instruction for Primary School Students".** It was intended to know the effectiveness of CAI developed by ONPEC for primary school students to learn English language and to provide suggestion to ONPEC for improving CAI Program on thebasis of obtained data. Investigator used multistage sampling technique. The investigator selected two cities by purposive sampling technique. Next, the students from standard XI from each school were selected by simple random sampling technique. In each school two groups, each of 30 students were formed. In this way, total 120 students were selected from two schools. The findings of the study showed that CAI was foundsignificantly effective in learning five topics of Thai subject. And the CAI developed by ONPEC was also found significantly effective in learning five topics of English subject to the students.

Yadav (2004) conducted study on **"Development of an IT enabled Instructional Package for Teaching English medium students of Vadodara city".** The objectives of the study were to develop an IT- enabled instructional package for teaching English Grammar and to determine its effectiveness in termsof achievement of the students and opinions of students and English teachers. A single group pre-test post-test design was employed for the study. 20 students were randomly selected from Std. VIII of the New Era Senior Secondary School, Baroda. It was found a significant gain in terms of students' achievement throughIT- enabled instructional package. It helped the students to learn kinds of sentences, namely interrogative, assertive, affirmative, negative, and imperative: orders or commands and exclamatory. The students and teachers were found to have favourable opinion towards the developed instructional package.

Zyoud (1999) developed a "Computer assisted English language teaching programme for VIIIstandard students". It was intended to study the effectiveness of the programme in terms of students' achievement with respect to vocabulary, grammar and comprehension. Students of one school i.e. Rosary School, Baroda formed the experimental group and students of the other school i.e. GEB School, Baroda formed the control group. The tools were used for data collection like Raven's progressive matrices sets A, B, C, D and E (Raven, 1960). Junior Index of motivation by Frimer(1970) and translated into Gujarati by Desai (1970). Findings of the study showed that when

computer is used to its full potential it can create an atmosphere where the students can learn and interact with the computer without being afraid of the teacher'spresence. The study proved that the prepared programme in teaching of vocabulary, grammar and comprehension was found effective in terms of achievement of students and found better than traditional method of teaching.

Merkel (1984) studied the **"Effectiveness of using computer assisted instruction in the teachingof English as a second language".** The study involving teaching of English as a Second Language at a private intensive English institute for international students examined the test scores provided for both Control Group and Experimental Group of students with the help of analysis of variance. The standard measure used is the Test of English as a Foreign Language (TOEFL), and the study attempted to show that with the addition of Computer Assisted Instruction to the regular ESL curriculum the ratio of reading proficiency scores to total test scores is higher for the Experimental Group than for the Control Group. The results of the study showed that the skill of reading was reinforced by the use of CAI and students in the Experimental Group had higher reading rates than those of in the Control Group.

- **Studies related to Math**

Maheta (2009) developed and studied the **"Effectiveness of Computer Assisted Instruction (CAI) Programme for instruction in Geometry at primary level".** The research aimed at studying the effectiveness of the package in the context of the academic achievement of the student and students' reactionstowards learning through the package. The research design adopted was 'Two groups randomized subjects only posttest designs'. 288 students were selected randomly and formed two groups. The data for analysis were collected by teacher made unit test and opinionnaire. T-test and Chi-square technique were used for the analysis of the data. The findings showed that Computer Assisted Instruction (CAI) Programme for Teaching the Units 'Basic concept of Geometry' and 'Circle' in Maths for Standard V group did not score significantly higher on post-test. And the CAI Programme for Teaching the Unit 'Triangle: Equilateral of triangle' in Maths for Standard VI group scored significantly higher on post-test. The students opined favorably for learning through Computer Assisted Multimedia Package.

Kundu (2008) conducted a study on **"Development and implementation of Computer Aided Instruction Programme for instruction in Geometry".** The study was intended to check the effectivenessof CAI programme compared to traditional method and with reference to the reactions of the students. As thestudy being experimental in nature, two sections of Standard X (English Medium) were selected purposively.To check the difference between group means of achievement scores, t-test was performed. Opinions towardslearning through CAI package were collected as frequencies on nominal scale. Thus, nonparametric chi- square technique was used to analyze the data. The findings showed that the CAI Package developed to teachTriangle portion of mathematics to the students of Class X, was proved effective in terms of the students' academic achievement. Also, the students responded positively towards learning through CAI Package.

Karia (2001) conducted a study on **"Effectiveness of Computer-Aided Learning (CAL) Programme as self-study technique with compared to PLM and conventional method of instruction".**The instruction was based on a unit 'Set Theory' in Mathematics of std. VIII. The experiment was implemented under 'Three groups randomized subject's only post-test design'. Students studying in Std. VIII Gujarati medium schools of Rajkot city were selected from two schools as the sample for the experiment andreplication of the study. 64 boys of Shri Mahatma Gandhi Vidyalaya were selected as experimental group and 44 girls of Gyandip Vidyalaya were selected for the replication. The teacher made achievement test wasadministered to collect the data. The data were analyzed by using ANCOVA. The findings showed that traditional method of teaching and Computer Aided Learning programme were equally effective for the boys, while traditional method of teaching proved more effective than CAL programme for girls. Programmed learning material and CAL programme were found equally effective for both boys and girls.

❖ **Studies related to Science**

Tyagi (2013) developed **"Computer Assisted Instruction Module in Biology for class XII".**He compared the achievement of the students with respect to Computer Assisted Instruction and conventional teaching in the subject of Biology. This study was intended to compare the achievement of thestudents on the basis of sex and intelligence. The study was consisted of a sample of 50 students studying inXII class. This study used different tools for the collection of data like Computer Assisted Instruction module on 'Genetics', Performa for Assessment, Group Test of Intelligence(GGTI), Achievement test on 'Genetics',Retention test and Reaction scale for students. The result of the study showed that Computer Assisted Instruction provided greater opportunities for the students to learn. CAI found better than the traditional method of learning.

Bhutak (2004) conducted a study on the **"Development and effectiveness of multimedia package for Science subject of Std.9"**. The Multimedia Package was in three parts, (a) PowerPoint Slide Show, (b) Self-study material and (c) Transparencies. The research was based on 'Two groups randomizedsubject's only posttest' design. The experimental group was given the treatment through Multimedia Packagewhile the control group studied through lecture method. With the technique of analysis of variance in scores it was tested that which medium was more effective. The findings showed that multimedia package was more effective in terms of achievement and retention of Science for both the groups of girls and the boys separately and jointly. Self-study material was more effective than slide show for girls, while slide show proved more effective than self- study material for boys. Slide show and self-study material were almost equally effective for girls and boys.

Sharma (2003) conducted a study aiming at the **"Effectiveness of Computer Assisted Learning in chemistry for the students of Std. XI".** Investigator studied the effectiveness of CAL with respect to students' achievement and their reactions regarding developed CAL. In this study the investigator employed the 'Pre-test, Post- test, Experimental design'. The data were collected with the help of pre-test, post-test and reaction scale which were constructed by the researcher. Investigator found that CAL was

effective for teaching Chemistry. It helped the students to learn the topic of 'Organic compound' and clarified the concepts. Students were found to have positive reactions towards the developed CAL. Students' reactions towards the CAL were found to be favorable with respect to the statements related to the interest, mode of presentation, content, clarity and the questions asked in the CAL.

Khirwadkar (1998) studied the **"Effectiveness of developed Computer Software for learning Chemistry at Std. XI".** The effectiveness of CAL package was studied with reference to students' achievement, student' intelligence level, motivational level, students' attitude and teachers' attitude. Findings of the study showed that the CAI package was found effective in terms of academic achievement of the students and instructional time. The teachers and students had positive attitude about developed CAI.

Nalayini (1998) conducted a study on **"Development and validation of Computer Assisted Instruction in Physics for high school students".** Investigator also studied the effectiveness and analyzed the variation among the students in the acquisition of various cognitive skills by learning through CAI. It was based on a unit 'Electricity' in Physics of std. IX. Investigator has selected the Quasi – Experimental design. Total 200 students of Std. IX were selected from Kendriya Vidyalaya and Sri Padmavathy Ammal matriculation school. The data were collected through Culture Fair Test scale published by Institute for Personality and Ability Testing; Science attitude scale; Interim test (unit test) and Achievement test prepared by the investigator. Findings of the study proved that the prepared CAI in teaching of Physics was found effective in terms of achievement of students and CAI was also found better than traditional method of teaching.

Gupta (1987) conducted a study on **"Computer Assisted Instruction (CAI) in chemistry under two different strategies".** The CAI mainly developed to study the relative effectiveness and to know the opinion of the student towards CAI. In this study the Investigator had employed the 'Pre-test, Post-test, Experimental design'. Under incidental sampling technique, Class XI students were selected and two groups of students were formed. The students of two groups were matched with respects to their age, sex, aggregate marks and marks in Science in the current school examination. One group

received instruction under strategy– I of CAI and another under strategy – II of CAI. Criterion tests were prepared by the researcher to collectthe data, which were used as pre-test, post-test and retention test. Also, an opinionnaire pertaining to the opinion of students towards CAI was used. The study revealed that the girls under both the strategies scored significantly higher than the boys in terms of their mean scores and mean retention scores. Also, the students under both the strategies had highly favorable opinion in terms of percentages of favorable response towardsthe CAI.

Prabhakar (1989) conducted a study on **"Development of software for Computer Aided Instruction (CAI) and its comparison with traditional method for teaching 'Semi-conductors' at highersecondary level".** The study was experimental and pretest-posttest control group design was used. The two groups were equated with respect to intelligence. Sample comprised a total 203 students of class XI and XIIfrom the schools of Indore city following CBSE syllabus. The different tools were used like Study Habits Inventory by Mukhopadhyay and Sansanwal, Scientific Attitude Scale by Grewal, Maudsley Personality Inventory by Jalota and Kapoor, Adjustment Inventory by Singh and Singh, Standard Progressive Matrices by Raven, Criterion test on selected topics of physics and Reaction Scale for the collection of data. Also, it was found to be effective in terms of reactions of the students. Both the classes XI and XII students were found to be equally favorable towards CAI material when the groups were matched with respect to pre-test.

Jeyamani (1991) conducted a research on studying **"Effectiveness of simulation model of teachingthrough Computer Assisted Instruction".** The major objective was to study the effectiveness of the simulation model of teaching as compared to the traditional method. The CAI package was developed by theinvestigator in Physics for class XI students. The sample for the investigation consisted students of Std. XI of two schools. The findings showed that experimental group performed better on the post-test and difference was significant with respect to sex and medium of instruction.

❖ **Studies related to Learning difficulties**

Kassem, (2019) explored the relative impact of student- and teacher-centered instruction on EFL freshmen‘s affective variables (anxiety, motivation, attitude, autonomy, self- efficacy and beliefs regarding English and its learning) and action. Two categories of English department freshmen at Shaqra University, KSA participated within the study. Students within the two categories completed a form inquiring the target affective variables. t-test proved that the two categories were unvaried in affective variables before the treatment. The treatment category was instructed in line with student-centered instruction for an educational year. The control category was instructed the same courses in line with the standard teacher-centered instruction. Analyses of sample with t-test proved that the treatment category outperformed the controlled category altogether on affective variables (except for instrumental motivation) and achievement.

Munro (2018) investigated that mid-20th-century students argued that second language (L2) instruction ought to be rooted in a very comparison of the structural characteristics of the primary language (L1) and L2. Their enthusiasm for a "scientific" approach to errors mirrored the read, supported the contrastive analysis hypothesis (CAH), thatlearners' difficulties might be foretold through strictly linguistic analyses. Pronunciation appeared significantly amenable to the present treatment. If academics knew their learners' issues before, they might presumptively style curricula and activities to deal withtheir students' wants. Though it before long became clear that a lot of aspects of CAH were seriously imperfect, interest in a very linguistic account of L2 pronunciation difficulties has persisted. This synthesis of empirical findings from pronunciation analysis demonstrates that the keenness for error prediction has been misguided, mostly thanks to two inaccurate beliefs: the "assumption of uniformity" and therefore the "assumption of equal gravity". The requirement for an alternate perspective promoting evidence-based teaching practices is incontestable.

Dunn and Ernst-Slavit (2018) investigated that many academics face the challenge of pupils who struggle with learning. Second-language problems raised teachers‘ anxiety concerning the way to manage intervention programming and whether or not to initiate a referral for education. This focused on the ideas of learning disability versus

difficulty and the perspectives of L2 teachers who should navigate the referral and identification processes of colleges once considering a student for doable long-run education services. The definition for L2 used here may be representative of some doable examples: a native French speaker (foreign language; L2 teacher) instructing in associate degree English-speaking school; or a mother-tongue English professor of a Latino kid (L2 student). The second-language (L2) facet may be on the part of the teacher or the pupil. In either case,the teacher must manage the referral to doable identification method and all of its nuances.

❖ STUDIES CONDUCTED ABROAD

Longberg (2012) conducted a study on **"Evaluation of Imagine Learning English, A Computer- Assisted Instruction of Language and Literacy for Kindergarten Students".** The present study sought toassess the impact of one such CAI program, Imagine Learning English (ILE), on both the receptive vocabulary and early literacy skills of 284 kindergarten students, including English language learners usinga 2 x 2 cross-over research design over a period of a full school year. Results of the *t*-tests from this within-subjects design showed no treatment differences on outcome measures between students when they participated in the ILE program and when they participated in "other" classroom activities, regardless of amount of time spent on this CAI program. These same results held true for English language learners for whom the program was originally designed. A strong period effect, however, was detected, with the treatment administered during period (i.e., either ILE or "other" instruction) having a more positive effect on students' language and literacy learning than the treatment that was administered during period.

Naba'h et al., (2009) conducted a study on **"The Effect of Computer Assisted Language Learningin Teaching English Grammar on the Achievement of Secondary Students in Jordan".** This study aimed at investigating the effect of using an instructional software program of English language on the achievement of secondary students in Jordan. The sample of the study consisted of 212 students distributedrandomly on four experimental groups and four control groups. Four public schools were purposefully chosen from the Educational Directorate in Zarqa for convenience. An

Analysis of covariance was used to find out the effect of the instructional program on the students' achievement. The findings of the study revealed that there were statistically significant differences between the students' achievement mean scores in grammar attributed to the instructional method of teaching, gender and stream of study.

Peterson and Samuel (2009) conducted a study on **"ICT Integration in Enhancing English Language Teaching and Learning".** This study was undertaken with the purpose to unfold and understandthe need for integration of ICT tools in the teaching and learning of English Language in Malaysian schools in particular oral communication skills. The study further examined the benefits of integrating ICT tools, thesuccess factors and obstacles encountered by English Language option teachers in ICT integration. The studyused a multiple-case design approach, involving mixed methods i.e. qualitative and quantitative approaches.It was found that the online tutorial using Instant Messaging tools not only improved their oral communication skills but further increased their attainment levels in terms of academic achievement and classroom participation. Another finding in the case studies revealed that the free audio and video conferencing tools embedded in Instant Messaging tools could be exploited by English Language teachers to enhance students' communication skills.

Yang (2008) conducted a study on**" Integrating the Task-Based Approach and the Grammar Translation Method with Computer Assisted Instruction on Taiwanese EFL College Students' Speaking Performance".** This study was to investigate the integration of the task-based approach with computer-assisted instruction and the Grammar Translation Method with Computer Assisted Instruction on Taiwan College students' speaking performance. Ninety-Three Taiwanese EFL college students from the Hsing Wu College were selected to participate in the study. The study was a mixed method research which included quantitative and qualitative method. The results of the study indicated that students of the task-based approach with Computer Assisted Instruction showed the higher post-test speaking scores than students of the grammar translation method with CAI; in particular. The task-based approach with CAI showed a significant increase in their scores from the pretest to the posttest.

Gilbert (2006) conducted a study entitled **"Effectiveness of Computer Assisted Instruction blended with classroom teaching methods to acquire automotive psychomotor skills".** Here two blended learning methodologies of web-based CAI and face to face classroom instruction were investigated in the Automotive Technology Department at Southern Illinois University Carbondale. Results were determined by a psychomotor electrical diagnostic skill evaluation of two matched group exposed to different blending methods of teaching basic electrical concepts. Analysis revealed that the blended teaching methods experienced by the experimental group demonstrated a comparative higher level of psychomotor electrical diagnostic skill capability.

Mulbery (2006) conducted a study on **"Effectiveness of Computer Assisted Instruction Compared to Traditional Instruction in a Basic Computer Proficiency Course at the Collegiate Level".** The purpose of this study was to examine the effectiveness of CAI program on students' achievement as measured by performance tests in computer proficiency course. This study was conducted in eight college computer proficiency sections in Utah. However, CAI did not have a different effect on males and females or traditional and nontraditional students. Finally, students believed that CAI training helped them learn software tasks and prepare for the performance tests.

White (2006) conducted a study on the **"Effects of Computer Assisted Instruction on Learning English Language Arts".** The Exploring Compound Words software used as the basis of the study, was developed by the researcher to aid students in English-Language Arts, interactively increasing their vocabulary development. The study systematically investigated the effects of Computer Assisted Instructionon learning compound words and fully incorporates the six levels of Bloom's Taxonomy to further enrich, enhance and extend the students' learning process. Twenty fourth graders, including both male and female students, were selected to participate in this study. These participants were tested to determine whether theirEnglish-Language Arts skills could be improved by using the interactive program. The participants were given pretest, treatment and posttest. In comparing the pretest and post-test scores, the results showed a significant increase on the post-test scores of the participants, there by indicating that the students' languagearts skills improved with the help of Computer Assisted Instruction.

Nuno (2005) conducted a study on: **"Is Computer-Assisted Instruction an Effective Tool in the Reading-Writing Classroom?"** The study demonstrates the real value of CAI in the classroom by evaluating several pieces of software. Furthermore, one specific piece of software was created and tested. This phonics software was tested with sixty students to further support the value and effectiveness of CAI inthe reading and writing process. The software referred to, *Zoo Phonics* (Nuno, 1999), explores the forty-twophonemes of the English language. Students write what they can say in a phonetic way. Two kindergarten classrooms of thirty students each participated in the study. The results of this study clearly supported the value and effectiveness of CAI in the modern classroom.

Humphreys (2001) conducted a study on, **"A Descriptive Analysis of a Computer-Assisted Instruction Developmental English Program."** The purpose of this study was to describe students' performance, experience, knowledge, and perceptions while enrolled in a developmental English program designed to prepare community college students for successful completion of a Basic English class throughthe use of computer-assisted instruction. The participants in this study were traditional and non-traditional male and female adults who attended John A. Logan College. Information was collected for developmentalstudents who were enrolled during the fall 1994, spring 1995 and Spring 1996 semesters. Participants took the Asset Test which determined the level of entry for developmental English course or courses. During thefall 1994 and spring 1995, a total of 4,367 students took the writing and reading skills tests. Of those 4,367 students, 959 (21.9%) scored in the remedial range while 1,089 (24.9%) scored in the decision zone (recommended but not required). A total of 448 subjects participated in the convenience sample of English courses at John A. Logan College. Of the total number of subjects, 446 subjects were students and two instructors who participated in a focus group interview and observations. The results of the description revealed that 50% of the developmental English students enrolled in English, 101 earned a "C" or better with computer-assisted instruction. Students perceived that they benefitted from Computer-Assisted Instruction in English, experienced a positive learning experience, and gained transferable skills.

Nutta (2000) conducted a study on **"Is Computer-Based Grammar Instruction as Effective as Teacher- Directed Grammar Instruction for Teaching L2 Structures?".** The study described to compare post-secondary English as a Second Language (ESL) students' acquisition of selected English structures based on the method of instruction—computer-based instruction versus teacher directed instruction. The population of the study consisted of 53 students enrolled in an intensive academic ESL institute of a major university in Florida. The independent variable was the method of grammar instruction, either teacher- directed or computer-based. The dependent variables were students' achievement scores on three separate criterion-referenced tests over the selected structures. The results showed that no significant differences werefound between the computer based and teacher-directed students' scores on multiple choice or fill-in the-blank tests. The results proved that computer-based instruction can be an effective method of teaching L2 grammar.

Tozcu (1998) conducted a study on the **"Effect of teaching sight vocabulary with Computer Assisted Instruction on vocabulary gain, decrease in reaction time for frequent word recognition andreading comprehension".** This study is about the effect of direct vocabulary instruction using CAI on vocabulary knowledge, reading comprehension and speed of word recognition. In this experimental study the students in the treatment group studied the highly frequent words of English on the computer for three hoursper week and for eight weeks whereas the students in the control group completed three hours of reading and reading comprehension exercises. The research findings showed increase in vocabulary gain, reading comprehension, and decrease in reaction time for frequent word recognition in case of both the groups. However, the treatment students showed significantly greater gains than the control students.

Zhao (1996) conducted a study on **"Attitudes of Directors of Intensive English as a Second Language Programs toward the Use of Computer Assisted Instruction in American Universities"** The study examined attitudes of ESL directors toward Computer-Assisted Instruction in American universities, and demographic characteristics of these universities and their ESL programs. A modified version of Menke's (1989) questionnaire was distributed to 203 ESL directors with a return rate of

71 per cent. Stratified random sampling was used to select subjects. ANOVA was used to analyze the data at an alpha level of 0.05. Most of ESL directors were female, in the age group of 41-50 with computer abilities above average. Directors with CAI more strongly agreed than those without CAI that computer is the mostviable model they had of how human mind functions, and a powerful tool for increasing students' participation in language learning. Directors without CAI more strongly agreed than those with CAI that ESL teachers perceived CAI as disruptive and threatening to their jobs.

Rose et al. (1992) studied the **"Effectiveness of Computer Assisted Instruction" with special reference to underachievers Ph.D. Education Bharathidasan University.** Objectives of the study were to develop and find out the effectiveness of CAI with TSS and CAI without TSS with references to the variables viz. sex, IQ and achievement level and to find out the interaction of the above variables and the treatment on the achievement score .The randomized block design was followed in the selection of the samples, with IQ as the blocking variable. The samples consisted of three groups of size 32 each composedof students of standard IX selected from Tamil Nadu State Board schools covering one rural and two urbanschools. The underachievers in the sample were identified by using the regression analysis. The tools used included CAI software on the language of sets, achievement test, and culturally fair intelligent test by Cattell and cattell, study habits inventory and Mathematics study attitude scale. The study revealed that both the CAI strategies were superior to the traditional method of instruction, and CAI with TSS was more effectivethan CAI without TSS for under achiever (UA). And there was no relationship between the post- treatment scores and the variables 'sex', 'local' and 'achievement level' of the experimental group. In case of the variables IQ, 'Study habits' and 'math's study attitude', the relationship between those variables and achievement was found to be positive.

Johnson et,al (2010), studied the **"Variability in reading ability gains as a function of computer- assisted instruction method of presentation"**. This study examines the effects on early reading skills of three different methods of presenting material with computer-assisted instruction (CAI): (1) learner- controlled picture menu, which allows the student to choose activities, (2) linear sequencer, which progresses the students through lessons at a pre-specified pace, and (3) mastery-based adaptive

sequencer,which progresses students through lessons based on whether or not the student has mastered the given skill.Preschool- and kindergarten-aged children (n = 183) were randomly assigned to one of the three CAI groups and spent 40 min a week, for 13 weeks, using the software program in a computer lab. An additionalcontrol group of students attending typical preschool or kindergarten received no CAI. Analysis by task, rather than overall reading score, revealed significantly better performance for the linear sequence group over controls and picture menu group on the Initial Sound Fluency task, while the mastery-based sequencergroup outperformed all three other groups on Non Word Fluency. In sum, these results suggest that the useof a sequencer is a very important element in presenting computerized reading content for young children.

Conclusion

The above studies were analysed in different subjects. It was found that more studies were on mathematics, on Language, on Social science and other general discipline. There were not much of studies in specific needed areas. Assistance is required for teachers and students in difficult areas to make teaching and learning process easier. To fill this gap the present study **"Effect of computer assisted instructions to enhance literacy skills among students with learning difficulties at secondary level"** was undertaken by the researcher.

METHODOLOGY

CHAPTER III
METHODOLOGY

INTRODUCTION

> **"*Experimental design is the blueprint of the procedures that enable the researcher to test hypotheses by reaching valid conclusions about relationships between independent and dependent variables. Selection of particular design is based upon the purposes of the experiment, the type of variables to be manipulated and the conditions or limiting factors under which itis conducted"***
>
> **- Best & Kahn (2011)**

Research methodology is the specific procedures or techniques used to identify, select, process, and analyze information about a topic. In a research paper, the methodology section allows the reader to critically evaluate a study's overall validity and reliability. It justifies the design choices, by showing that the chosen methods andtechniques are the best fit for the research aims and objectives, and will provide valid and reliable results.

In this chapter, the investigator discussed the method adopted, area of study, population, sample of the population, sampling technique, and instrument for data collection and method of data analysis.

3.1 Selection of method

An experimental research is testing the independent variable (s) to suggest the gathering of evidence relating to current conditions. The investigator has adopted experimental method to study the **"Effect of computer assisted instructions to enhance literacy skills among students with learning difficulties at secondary level".**

Locale of the study

The investigator selected sample from grade 6 students (N=30) from Sri Avinashilingam Hr.Sec.School for Girls, Coimbatore.

3.2 Selection of Sample

A sample is a small proportion selected for observation and analysis. The Sampling procedure can be compared to a mirror which gives a reflection true to the original. (S.P.Gupta, 2005)

Equal distribution of sample is been taken in both control group (N=30) and experimental group(N=30) for the study **(Table 3.1 and Figure 3.1).**

Table 3.1 Distribution of Selected Sample

S.No	Name of the School	Gender	N	%
1	**Experimental group**	**Girls**	**30**	**50**
2	**Control Group**		**30**	**50**

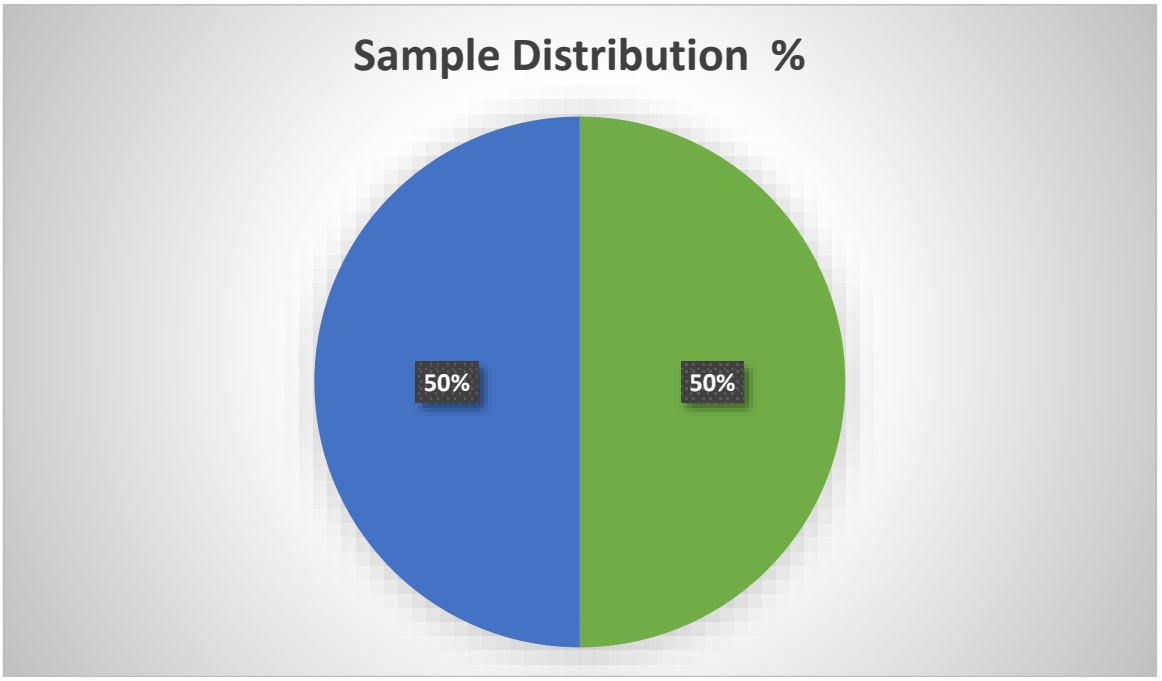


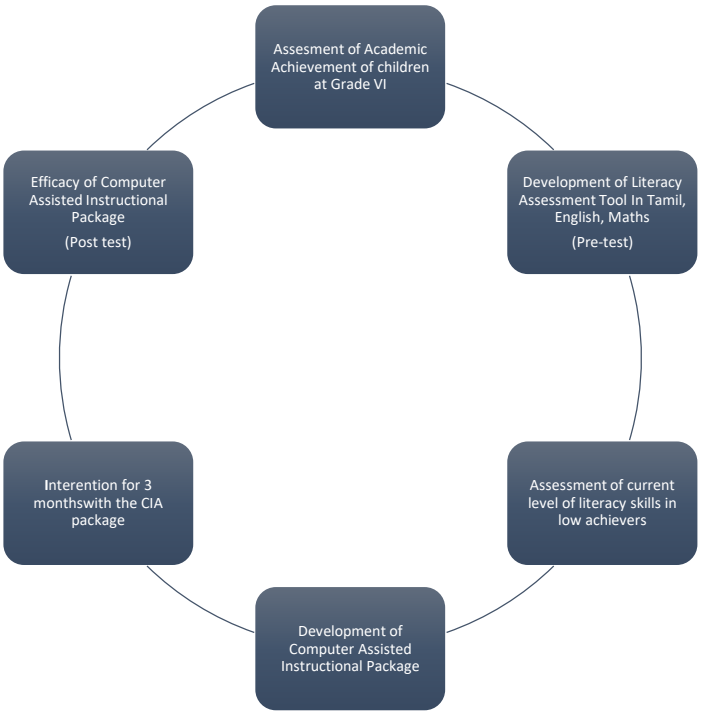
Figure 3.1 Distribution of Samples

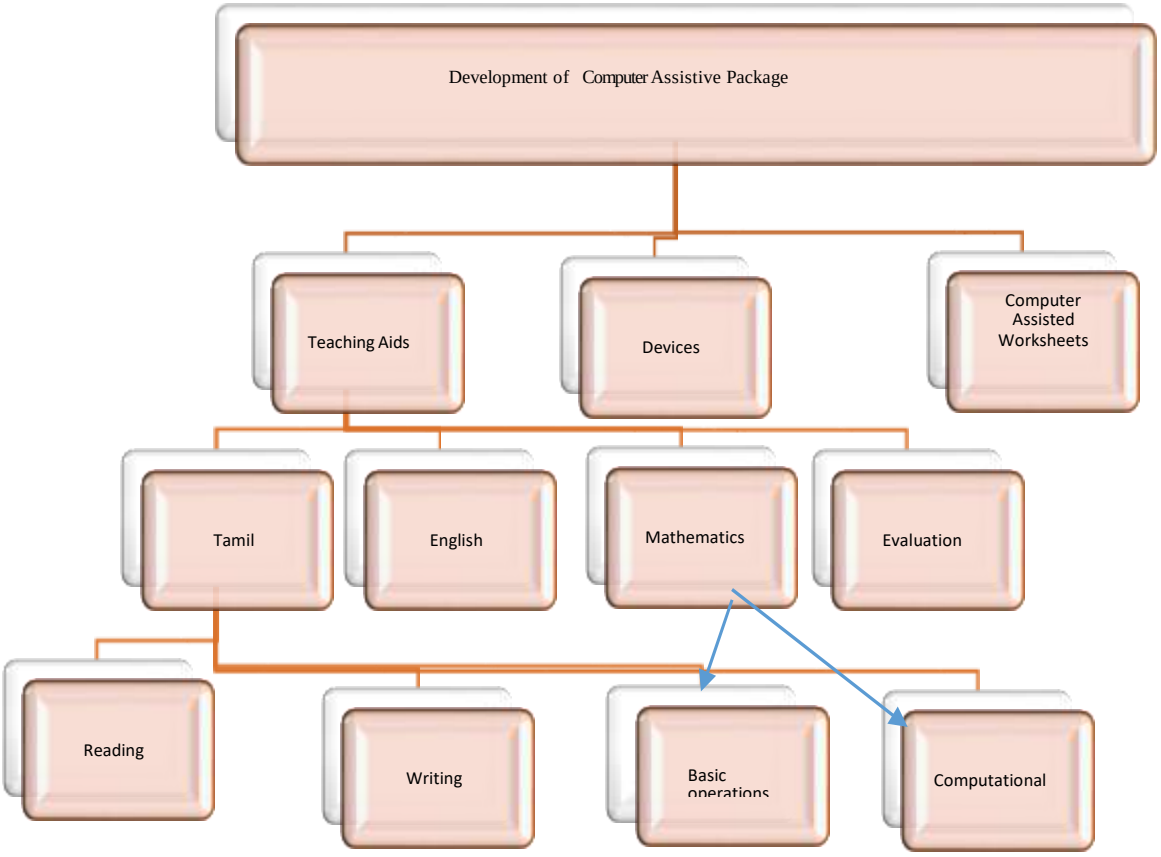
3.3 Selection of the Tool – Achievement Test

"The use of the particular tool depends upon the type of the problem and each research tool is appropriate in a given situation to accomplish a particular purpose" **(Best and Khan, 2006)**.

The Analysis of Academic achievement of VI standard students at Secondary level was obtained from. Academic record maintained for the Academic year (2021-2022) for Tamil, English and Mathematics.

Figure – 1 depicts the flow chart that brings to focus the major step involved in this research work.





3.4 Description of the Pre-test tool

3.4.1 Preparation of Literacy Skill Analysis Tool

Reviewing the textbooks of Grade VI (TERM – III) Tamil, English and Mathematics an evaluation tool was developed to identify the literacy skills of students in Tamil, English (Reading and Writing) and Mathematics (Basic Operations & Computational). Grade Level Assessment Device (GLAD, 2003) developed by Narayan-(NIMH) was used as a base line for development of the present Literacy Assessment Tool for this research. A thorough analysis of the prescribed text by the State Government for Grade VI enabled the investigator to identify the concepts and skills required to identify in Tamil, English and Mathematics. (Appendices – 2)

3.1.1 Analysis of learning difficulties in Tamil

3.1.2 Analysis of learning difficulties in English

3.1.3 Analysis of learning difficulties in Mathematics

3.1.1 Analysis of learning difficulties in Tamil

The concepts and skills to be included for the assessment of Literacy skills in Tamil is given below:(**Table 3.2)**

Table 3.2 Analysis of learning difficulties in Tamil

Question	Concept	Skill	Score
Read passage	Reading skill Writing skill	**General Paragraph** - Letter identification - Reading letters - Meaning of the phrase	5
Letter differentiation	Listening skill Writing skill	**General Paragraph** - Memory - Understanding	10
Develop the hints and write a story	Reading skill Writing skill	**General Paragraph** - Memory - Understanding - Comprehend	5

3.1.2 Analysis of learning difficulties in English

The concepts and skills to be included for the assessment of Literacy skills in English as given below: (**Table 3.3)**

Table 3.3 Analysis of learning difficulties in English

Question	Concept	Skill	Score
Fill in the blanks with appropriate Conjunctions	Reading skill Writing skill	**General Paragraph** - Reading letters - Letter Identification - Meaning of the phrase	5
Jumbled Sentence	Reading skill Writing skill	**General Paragraph** - Understanding - Memory - Retention	10
Reading Comprehension	Reading skill Writing skill	**General Paragraph** - Letter identification - Reading letters - Meaning of the phrase	5
Refer to dictionary andfind out the meaning	Readingskill Writingskill	**General Paragraph** - Understanding - Memory - Identifying and Writing the appropriate meaning	5

3.1.3 Development of Literacy Assessment Tool for Mathematics

Enabled to identify the concepts and skills to be included for the assessment of Basic operational and computational skills in Mathematics as given below: (**Table 3.4)**

Table 3.4 Analysis of learning difficulties in Mathematics

Question	Concept	Skill	Score
Add the following	Basic operational Skill	- Observing, understanding, thinking, Problem solving skill as are learned. - Build rote memory - Developing counting addition	5
Solve the equations	Computational skill	- Build rote memory - Developing counting skill, addition - Understand the difference between same denominator and different denominator	5
Subtract the following	Basic operational Skill	- Observing, understanding, thinking, Problem solving skill as are learned. - Build rote memory - Developing counting subtract	5
Solve the equations	Computational skill	- Build rote memory - Developing counting skill, subtract - Understand the difference between same denominator and different denominator	5

Multiplication	Computational skills	- Build addition fact - Learn multiplication table - Understand the difference between samedenominator and different denominator	5
Division	Computational skills	- Build addition fact - Learn multiplication table - Learn the terms, dividend, divisor, and reminder	5

3.5 Questionnaire for teachers

The questionnaire for teachers was prepared which includes general Information like Gender, Grade\Class, Socio-economic Status.(Refer Appendix)

3.6 Jury Opinion

The tools were submitted to a group of experts in the Department of Education and Department of Special Education for Validity. The consistency of the content developed was thus established by expert review.

3.7 Pilot Study

A pilot study is a miniature version of study that the researcher uses to test a procedure prior to the actual study. The test developer then revises the test to fix any problems with actualcircumstances in which the test will be used.(Rothgeb 2008). The pilot study was conducted in Sri Avinashilingam Hr.Sec.School for Girls, Coimbatore for sample size 10 and found to be reliable and validity for the final study.

3.8 Preparation of the Computer Assisted Instructions Package

Based on the above observation an attempt is made by the investigator to prepare the Computer Assisted Instructions package. Based on the school content, the investigator prepared the Computer Assisted Instruction Package and use a pre-test tool and Post- test. A total of N=30 students were taught to students. A period of three months was taken to give remedial intervention.

Preparation of Computer Assisted Instruction- Intervention Package is discussed under the following heads:

3.8.1Teaching Aids, Apps and Assistive Devices – Tamil

3.8.2Teaching Aids, Apps and Assistive Devices – English

3.8.3 Teaching Aids, Apps and Assistive Devices – Mathematics

3.8.1Teaching Aids, Apps and Assistive Devices – Tamil

Videos, software available were used to support teaching – learning Vowels and Consonants in Tamil. **(Table 3.5a)**

Table 3.5 (a) Teaching Aids, Apps and Assistive Devices – Tamil

Concept	**Methods**	**Apps**	**Assistive Devices**
Letter sounds	Flash cards were used, read and write	Agaram Tamil Teacher	Word Processor, Learning words in Tamil and English
Letter Identification	Word identification was trained, made to write the words when dictated	Tamil Kids Learning	Reading Systems
Rhyming words	Flash cards were used to teach rhyming words	தமிழ் ஆத்திசூடி	Concept mapping connecting new information for higher concept.
Compound words	Pictures, Flash cards and objections in classroom were used	Tamil Grammar easy	Word Prediction, Develop writing skill
Split words	Same method was followed in compound words	**தமிழ் கதைகள்**	Syllabification, Pronunciation of letters
Sentence formation	A collection of word cards given to form a sentence	**தமிழ் கதைகள்**	Speech recognition, Development of reading and writing

3.8.2 Teaching Aids, Apps and Assistive Devices- English

Videos, Software available used to support the identified slow learners in teaching-learning concepts in English alphabets, vowels and consonants. **(Table 3.5)**

Table 3.5 (b) below gives details Teaching Aids, Apps and Assistive Devices- English

Concept	Methods	Apps	Assistive devices
Phonetics	Sight cards were used, repetition of words, with Phonetic songs, letter identification skills.	ABC Kids	Word Processor, Learning words inTamil and English
Conjunctions	Word identificationwas trained, made to write the words when dictated	ABC Spellings	Reading Systems Development of reading skill
Jumbled Sentences	Flash cards were used to teach rhyming words.	English Class 6 Grammar	Concept mapping connecting new Information for higher concept.
Compound words	Pictures, flashcardsand objects in the classroom	Jolly Phonics	Speech Recognition

Table 3.5 (c) Teaching Aids, Apps and Assistive Devices - Mathematics

Basic mathematical skills that are essential for Computational operations Viz., Addition, Subtraction, Multiplication and Division in Fractions were incorporated with videos, available software.

Table 3.5 (c) Computer Assistive technology used in intervention- Mathematics

Methods	Apps	Assistive Devices
Oral method with flash cards to teach proper, improper and missed fractions, Number line	Visual fractions Fraction mash	Taking calculators\ Built in Speech synthesis
Fractions with same and different denominators were taught	Hopscotch – adding	
Fractions with same and different denominators were taught	Fractions Drills free	
Fractions with same and different denominators were taught	Multiplicaion tables,math games , tables	
Fractions with same and different denominators were taught	Fractions learning	

3.9 Intervention Using Computer Assistive Instruction Package

Intervention was given to the sample for a period of three months through Computer Assisted Instructional package for teaching appropriate concepts. The sessions werescheduled in the week days (Monday to Friday) per day for a duration of 90 minutes per session for each subject viz. (Tamil, English and Mathematics). The investigator conducted individual and group

teaching sessions. In order to bring about positive changes in their behavioral aspects listening and learning skills prompt was used .The sessions also included audio and video sessions to enhance their learning.

Teaching aids, Assistive devices have been used as the students become more engaged any aremore likely to understand the topic being taught. These materials assist students in learning which consistedof video, audio and hands-on tools to help involve the students and enhance the learning experience.

3.10 Post-Test Tool

Post –test was conducted after the successful utilization of the intervention package. The sample who participated in the pre-test were made to participate in post-test too. This was done to evaluate the students with learning difficulties have enhanced in their Literacy Skills using Computer Assisted Instructional Package.

Data Analysis

The collected data were consolidated tabulated and analyzed statistically by using the following tests:

- Mean
- Standard Deviation
- Percentage Analysis
- Test of Significance (t-test)

Conclusion

In the current chapter, the investigator has explained the method of investigation followed for the study under various headings like research methods, Population, Sample, tools. Even though methodology occupies a central place in any research endeavor, its efficacy could be approved only through data analysis.Therefore data analysis which was done is described in be following Chapter 1V Analysis and Interpretation.

ANALYSIS AND INTERPRETATION

CHAPTER IV
ANALYSIS AND INTERPRETATION

INTRODUCTION

"Analysis of data means studying the organized material in order to discover the inherent facts. These data are studied from as many angles as possible either to explore the new facts or interpret already known existing facts."- (Koul. L, 2006). The most important part of the investigation is the analysis and interpretation of data. It involvesbreaking with complex factors of simple parts together in new arrangements for the purpose of interpretation. The present study is aimed to study the **"Effect of computer assisted instructions to enhance literacy skills among students with learning difficulties at secondary level".** The investigator analysed data withthe help of appropriate statistical techniques and the analysed data were given in form with interpretation.

Qualitative Analysis

The qualitative analysis of students and teachers were done to interpret the details of the subjects and also draw to inferences drawn from pre-test and post-test scores.

The qualitative analysis of students and teachers are corroborated under the following headings.

Qualitative Analysis

Background information of the teachers

Cent percent of teachers from the selected schools were female who taught Tami, English and Mathematics. Cent percent of teachers from both schools were with B.Ed. There was a marginal difference in age category between 30 years to 55 years. More than 75%of teachers had 15 years of teaching experience in the teaching field. Monthly income was obtained based on their age, experience and qualification. Majority of teachers had 15 years of experience and received an average amount ranging from Rs.52, 000 – Rs.49,000. Cent percent of the type of schools chosen were Government Aided Schools.

Cent percent of students from the selected schools were female who are studying Tami, English and Mathematics. There is a marginal difference in age category between 11 years to 13 years.

4.1 THE PERCENTAGE SCORE OF STUDENTS OF GRADE VI STUDENTS IN TAMIL, ENGLISH AND MATHEMATICS

ACADEMIC ACHIEVEMENT OF GRADE VI STUDENTS IN TAMIL, ENGLISH AND MATHEMATICS

Percentage Score of Students of grade vi students in Tamil, English and mathematics is discussed below**:(Table 4.1)**

Table 4.1 ACADEMIC ACHIEVEMENT OF GRADE VI STUDENTS IN TAMIL, ENGLISH AND MATHEMATICS

SUBJECT	Percentage Score of Students			
	<35	35-55	55-75	75>
TAMIL	0.77	15.49	18.26	65.48
ENGLISH	0.26	7.31	56.22	22.91
MATHEMATICS	-	3.97	13.23	82.8

Considering the percentage score 40-70 percent of students scored 75 percent and above in Tamil and English while 80 percent of students scored 80 percent and above in mathematics. An overall analysis revealed better and enhanced percentage score by students.

An overall analysis revealed better and enhanced percentage score by students with grade 6 level. It was observed that the marks assigned to the students in the record maintained in schools was rather very high and did not reveal their actual level of people . Therefore, the observation made was that students securing less than or below 35 percent were just 10 percent of the population. It was noticed that the student performance in Mathematics was much higher than Tamil the student's mother tongue and English their second language.

4.2 The Mean Academic Achievement Score of Grade VI Students

The Mean Academic Achievement Score of Students in Relation to School and Subject is been discussed in **(Table 4.2 and Figure 4.3)**

Table 4.2 The Mean Academic Achievement Score of Students in Relation to School and Subject.

GROUP \SUBJECT	Mean Score		
	TAMIL	ENGLISH	MATHEMATICS
Experimental group	79.35	77.67	83.73
Control group	79.77	78.72	80.36

In terms of Mean Academic Achievement core the overall picture of student performance did not reveal much of a difference between Schools and between subjects. It was surprising that the mean score for Experimental group was much higher (above 83%) than Control group with reference to Mathematics.

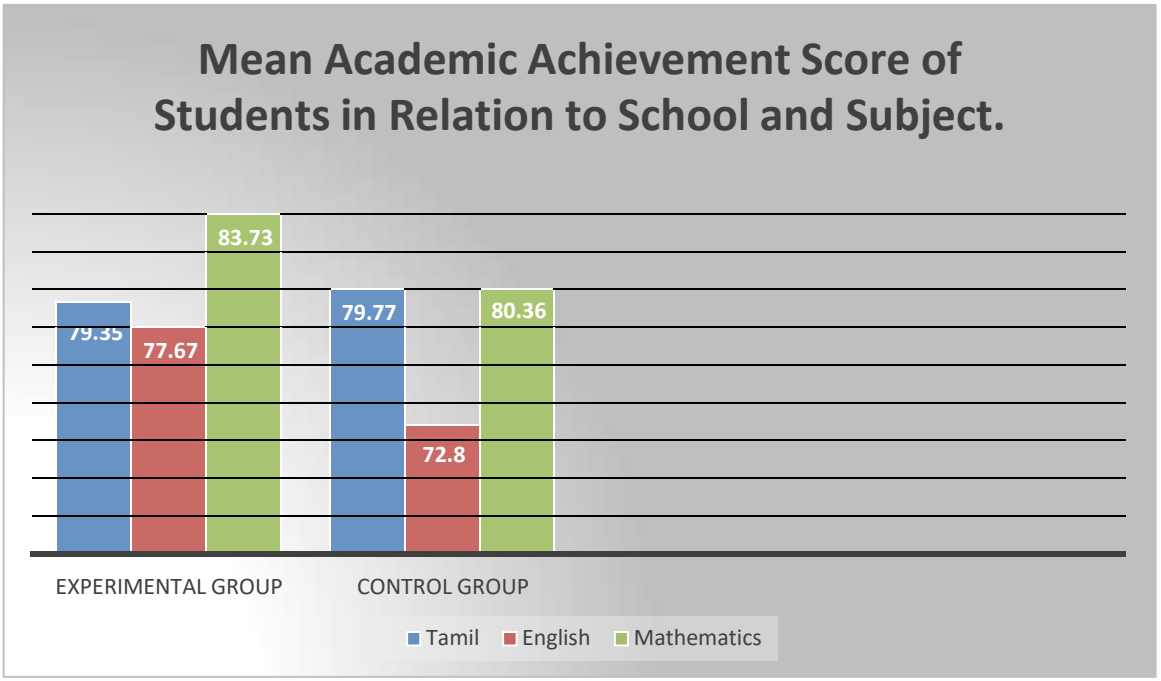


Figure 4.3 Mean Academic Achievement Score of Students in Relation to School and Subject.

4.3 Analysis of Pre-test tool

Identification of Current Level of Literacy Skills of Students at Secondary Level

The Pre-test tool was used to find out the current level of literacy Skills of students identified as students with learning difficulties from Grade VI .The analysis is been discussed under the following headings:

4.3.1 Analysis of Mean Score of Literacy Skills of Students with learning difficulties

4.3.2 Analysis of Mean Score in Tamil, English (Reading and Writing) and Mathematics- (basic operations and Computational Skills).

4.3.1 Analysis of Mean Score of Literacy Skills among Students with learning difficulties

The data thus obtained using the tool developed for the three subjects were analyzed in terms of Mean scores obtained in Reading and Writing Tamil and English and Computational Skills in Mathematics. The overall performance of control group and experimental group in terms of the Mean score in Literacy skills is tabulated below.**(Table 4.4 and Figure 4.4)**

Table 4.4 Mean Score of Literacy Skills among students with learning difficulties

GROUP/ SCHOOL	Mean Score of students (N=30)		
	TAMIL	ENGLISH	MATHEMATICS
Experimental group	23.19	13.50	21.33
Control group	20.56	22.14	20.69

It can be discussed that, though no marked difference could be observed in terms of Mean score obtained across three subjects, the students of control group had scored better in Tamil and Mathematics than in English.

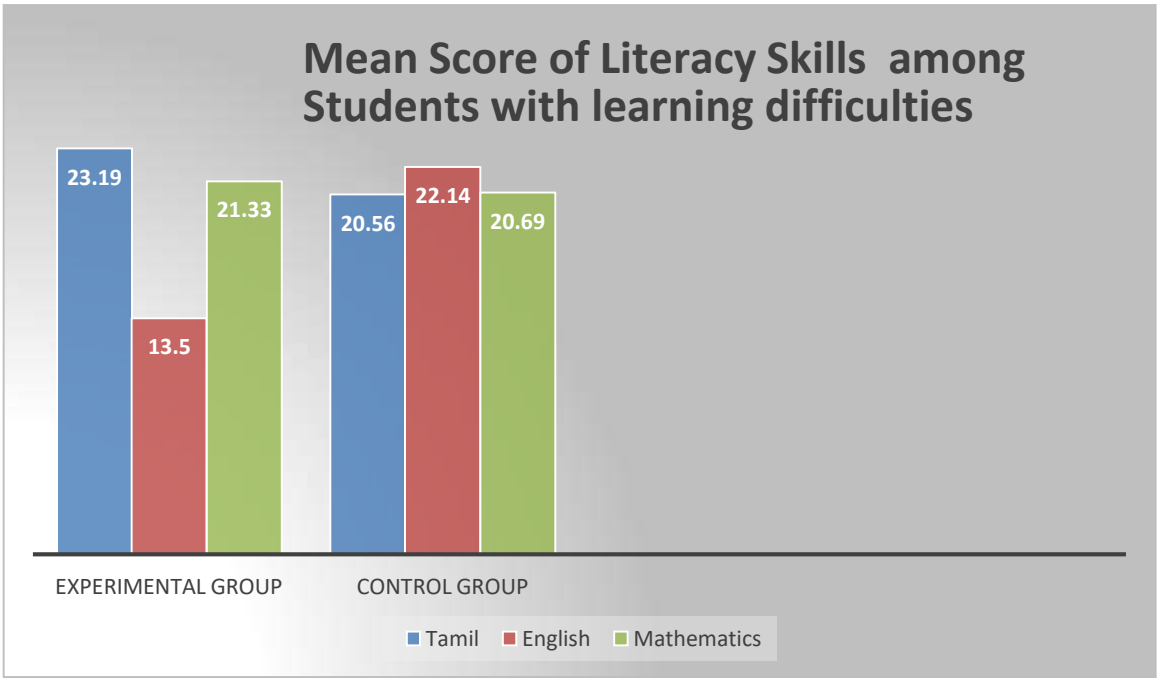


Figure 4.4 Mean Score of Literacy Skills among students with learning difficulties

4.3.2. Mean Score of Students in Tamil, English (Reading & Writing) and Mathematics –(Basic operations and Computational Skills)

The mean Score of Students in Tamil, English (Reading ,Writing) and Mathematics –(Basic operations and Computational Skills) discussed below. **Table 4.5 and Figure 4.5**

Table 4.5 Mean Score of Students in Tamil, English (Reading & Writing) and Mathematics – (Basic operations and Computational Skills) with respect to location

Subject \ Locality		Rural	Urban
Tamil	Reading	8.37	10.05
	Writing	9.15	10.05
English	Reading	7.39	6.90
	Writing	11.56	6.87
Mathematics	Basic operation	11.72	16.96
	Computational	9.60	5.27

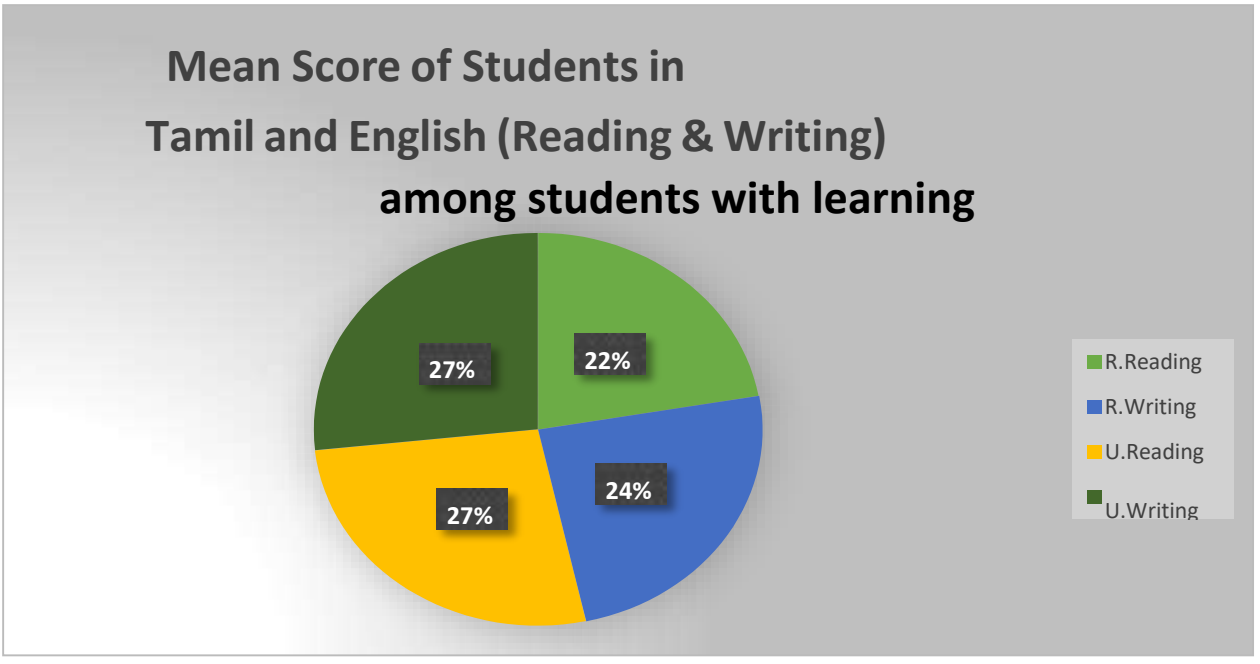


Figure 4.5 (a) Mean Score of Students in Tamil and English (Reading & Writing) among students with learning difficulties

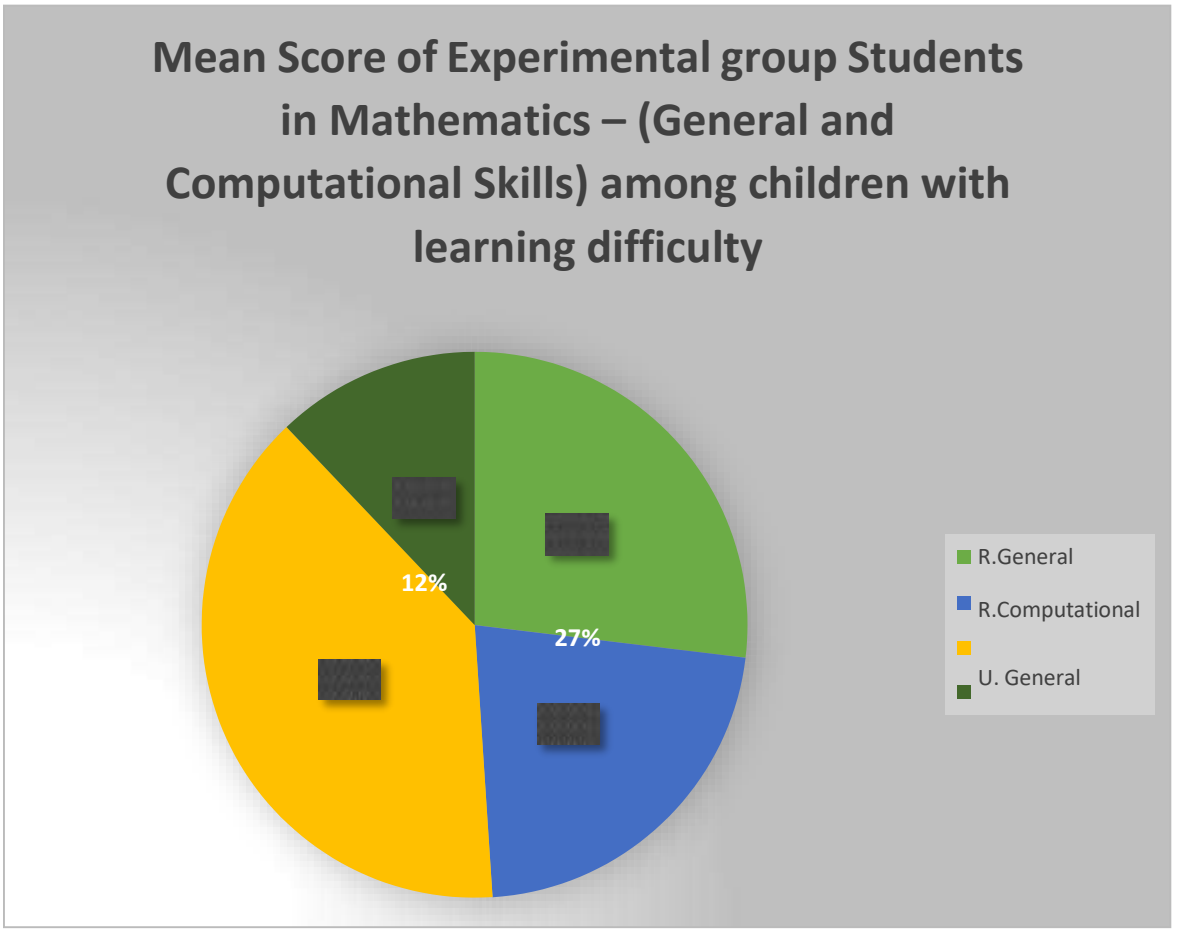


Figure 4.5 (b) Mean Score of Students in Mathematics – (Basic concepts andComputational Skills) at grade 6 level with respect to location

From the above tables, there exist no major change in the mean value of reading and writing of both Tamil and English. There is a slight difference in the Mathematics basic operational skills in rural area and in urban area.

Quantitative Analysis

4.4 Effect of Computer Assisted Instructional Package among Students with learning difficulties

The use of Computer Assisted Instructional Package to enhance literacy skills was an effective approach for students with Learning Difficulties to experience greater success when they were allowed to use their abilities (strengths) to work around their difficulties (challenges). In the present investigation the Computer Assisted Instructional Package was developed and the whole focus was on enhancing literacy skill in Tamil, English and Mathematics using t-test analysis to the study on effect of computer Assisted Instructional package is further discussed as follows

4.4.1 Overall comparison of pretest and Posttest scores of Students with learning difficulties

Overall comparison of pretest and Posttest scores of Students with learning difficulties is been discussed in the table 4.7 and figure 4.7.

Table 4.7 Overall comparison of pretest and Posttest scores of Students with learning difficulties

Group	Mean		Total	S.D		't'
	Pre test	Post test		Pre test	Post test	
Experimental group	18.09	64.12	60	10.79	17.13	20.63
Control group	17.55	43.02		9.45	12.12	12.59

The above table shows that the calculated t value (20.63) of the experimental group is higher than that of the control group(12.59). Hence, there is a drastic difference in the experimental group's than that of the control group. It is interference that the Intervention has played a vital role in enhancing the literacy skills among students with learning difficulties.

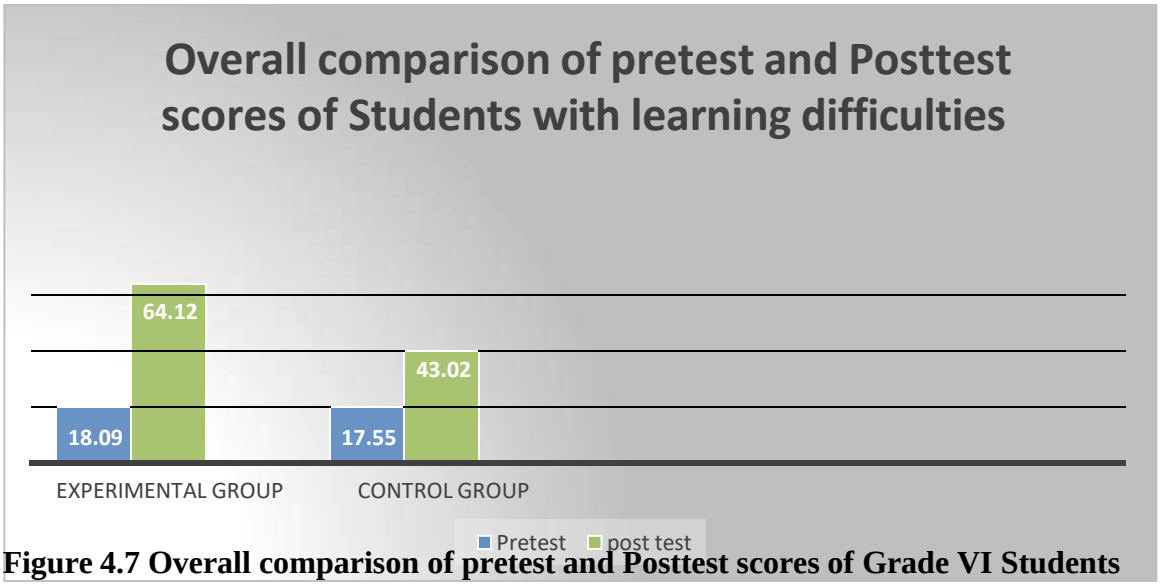


Figure 4.7 Overall comparison of pretest and Posttest scores of Grade VI Students

Table 4.8 (a) Comparison of pretest and Posttest scores of Reading among Students with learning difficulties

Name of the School	Mean		Total	S.D		't'
	Pre test	Post test		Pre test	Post test	
Experimental Group	9.89	25.50	60	5.11	8.21	19.47
Control group	4.78	7.39		4.78	5.885	10.45

The above table shows that the calculated value of 19.47 of the experimental group is higher than that of the control group, 10.45. Hence, there is a drastic difference in the experimental group's pre- and post-test results with that of the control group. It is interference that the Intervention has played a vital role in enhancing the reading skills among students with learning difficulties in secondary school children.

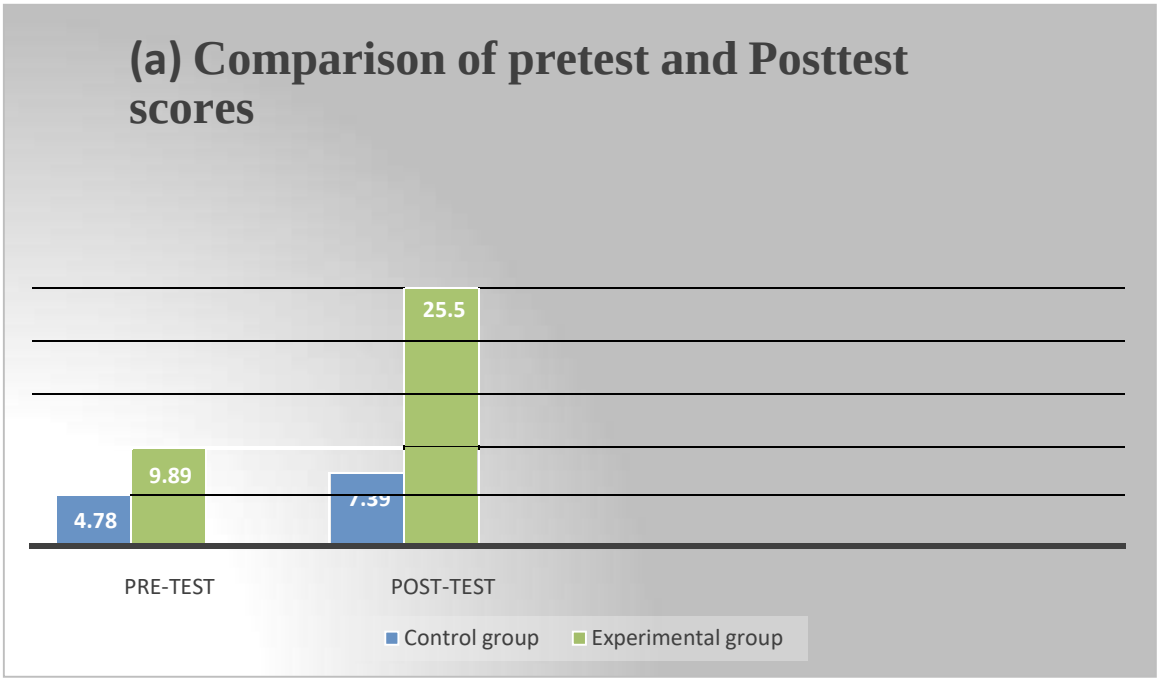


Figure 4.8(a) Comparison of pretest and Posttest scores of Reading among Students with learning difficulties

Table 4.8 (b) Comparison of pretest and Posttest scores of Writing among Students with learning difficulties

Group	Mean		Total	S.D		't'
	Pre test	Post test		Pre test	Post test	
Experimental Group	6.87	27.08	60	3.84	19.06	26.61
Control Group	7.56	12.38		3.38	5.80	11.51

The above table shows that the calculated value of 26.61 of the experimental group is higher than that of the control group, 11.51. Hence, there is a drastic difference in the experimental group's pre- and post-test results with that of the control group. It is interference that the Intervention has played a vital role in enhancing the writing skills among students with learning difficulties in secondary school children.

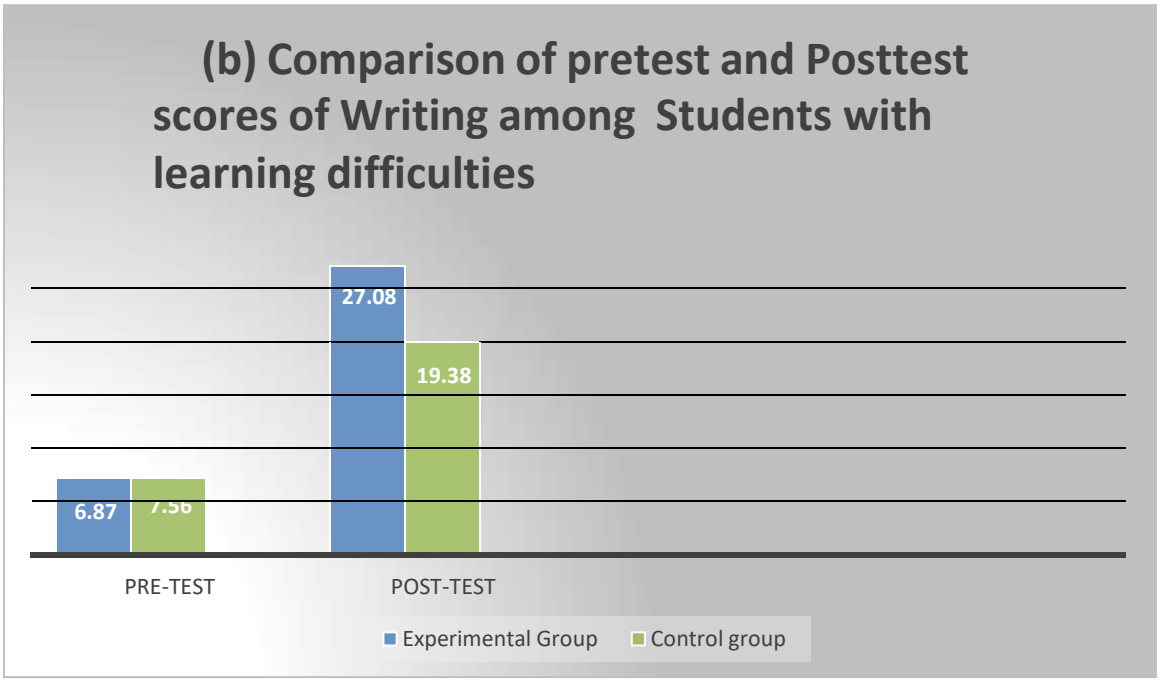


Figure 4.8(b) Comparison of pretest and Posttest scores of Writing among Students with learning difficulties

Table 4.8 (c) Comparison of pretest and Posttest scores of Arithmetic Skills Students with learning difficulties

Name of the School	Mean		Total	S.D		't'
	Pre test	Post test		Pre test	Post test	
Experimental Group	22.23	79.65	60	6.30	51.55	34.21
Control group	21.26	36.35		9.69	65.77	20.96

The above table shows that the calculated value of 34.21 of the experimental group is higher than that of the control group, 20.96. Hence, there is a drastic difference in the experimental group's pre- and post-test results with that of the control group. It is interference that the Intervention has played a vital role in enhancing the Arithmetic skills among students with learning difficulties in secondary school children.

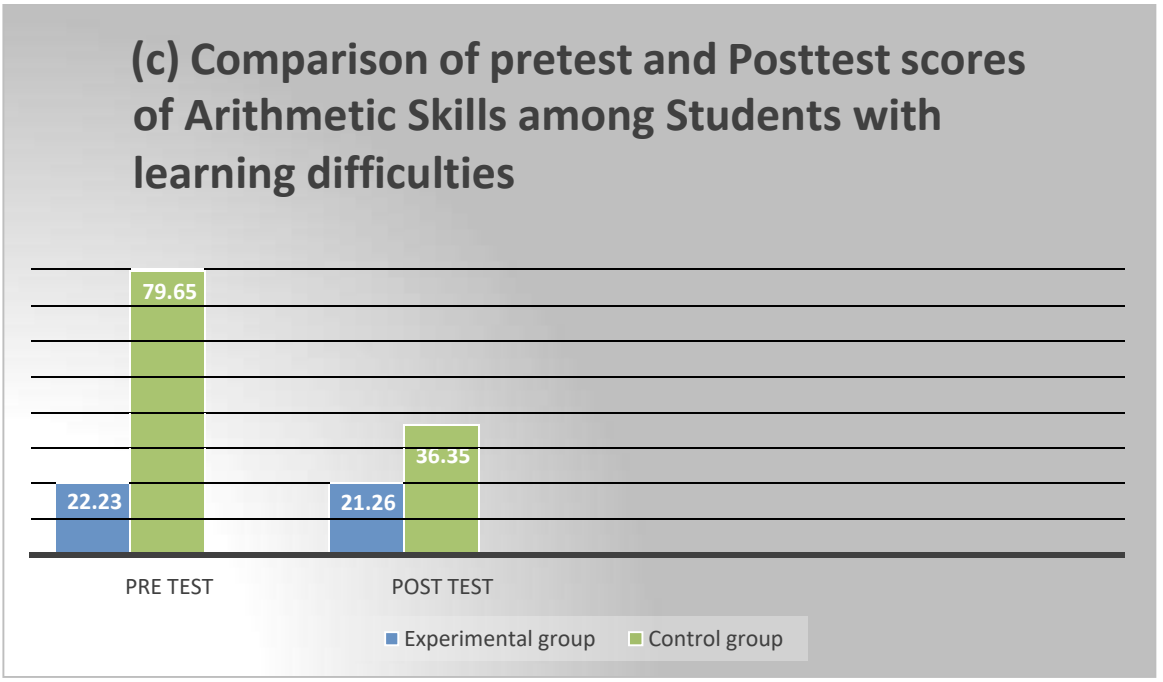


Figure 4.8(c) Comparison of pretest and Posttest scores of Arithmetic among Students with learning difficulties

4.4. Analysis of Pre and Post Test Score of literacy Skill of students with learning difficulties

4.4.1 Analysis of Pre and Post Test Score of students with learning difficulties in Tamil

4.4.2 Analysis of Pre and Post Test Score of students with learning difficulties in English

4.4.3 Analysis of Pre and Post Test Score of students with learning difficulties in Mathematics

4.4.4. Analysis of Pre and Post Test Score of students with learning difficulties in Mathematics-Basic operations and Computational Skills

4.4.1 Analysis of Pre and Post Test Score of students with learning difficulties in Tamil

The pre and post Test Score of students with learning difficulties in Tamil in relation to Gender and Locality (Table 4.6)

Ho: There is no significant difference in the Pre-test & Post- test score of students with learning difficulties in Tamil in relation to Gender and Locality with respect to Gender and locality.

Table 4.6 Pre and Post Test Score of students with learning difficulties in Tamil in relation to Gender

Group	Type of test	Number	Mean	Std.dev	Df	't'-value	Sig
Experimental group	Pre-test	30	22.48	9.86	28	12.86	Sig**
	Post-Test		65.33	15.35			

Sig**- Significant

From the above table, it is evident that the calculated 't'- value is 12.86 which is found to be significant at 0.05 percent level. It is clear that there is a there is a significant difference in the Pre-test & Post- test score of with learning difficulties in Tamil with respect to gender. Hence the hypothesis "*there is no significant difference in the Pre-test & Post- test score of students with learning difficulties in Tamil withrespect to gender*" is rejected. It infers that the computer assisted instruction used in teaching Tamil along with other teaching Aids and Apps did brought about marked difference in the performance of the students with learning difficulties in Tamil in Tamil(both Reading and Writing skills)

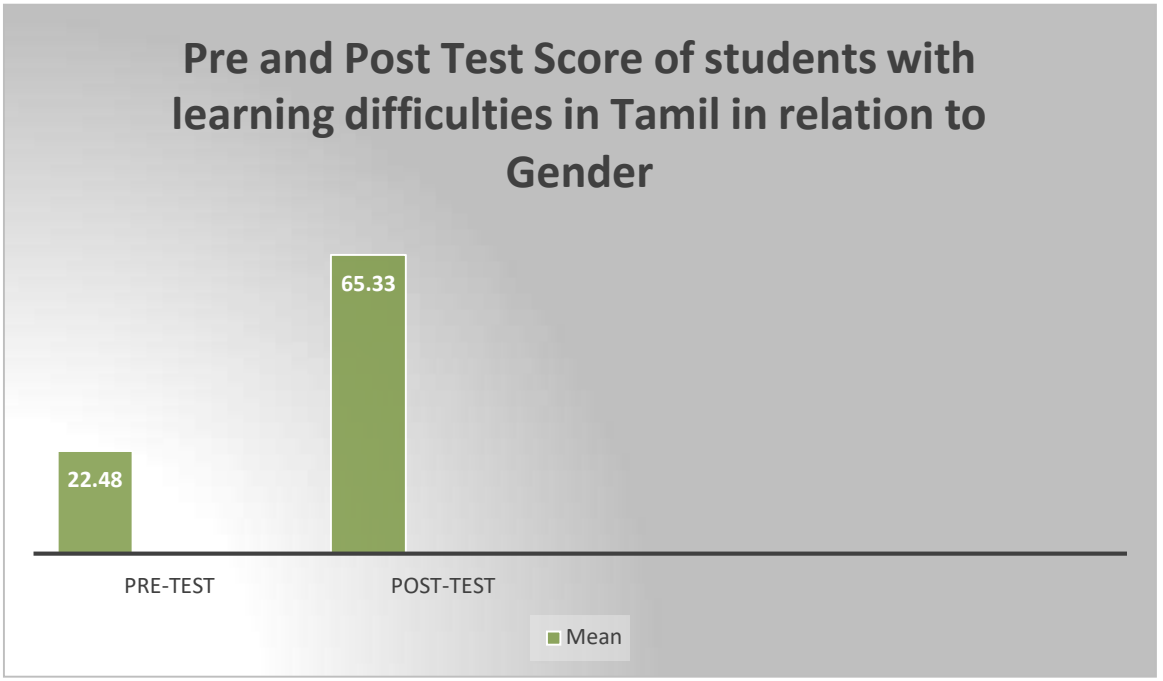


Figure 4.6 Pre and Post Test Score of students with learning difficulties in Tamil

The Pre and Post Test Score of students with learning difficulties in Tamil in relation to Locality (Table 4.7)

Ho: There is no significant difference in the Pre-test & Post- test score of students with learning difficulties in Tamil with respect to locality.

Table 4.7 Pre and Post Test Score of students with learning difficulties in Tamil in relation to Locality

Locality	Type of test	Number	Mean	Std.dev	Df	't'- Value	Sig
Rural	Pre-test	30	19.44	13.18	28	5.5005	Sig**
	Post-test		57.87	13.67			
Urban	Pre-test		20.57	8.27		11.67	
	Post-Test		64.46	18.34			

Sig**- Significant

From the above table, it is evident that the calculated 't'- value is 5.5005 and 11.65 which is found to be significant at 0.05 percent level. It is clear that there is a there is a significant difference in the Pre-test& Post- test score of students with learning difficulties in Tamil with respect to locality. Hence the "hypothesis *there is no significant difference in the Pre-test & Post- test score of students with learning difficulties in Tamil with respect to locality"* is rejected. It infers that the computer assisted instruction used in teaching Tamil along with other teaching Aids and Apps did brought about marked difference in the performance of students in Tamil (both Reading and Writing skills) irrespective of locality.

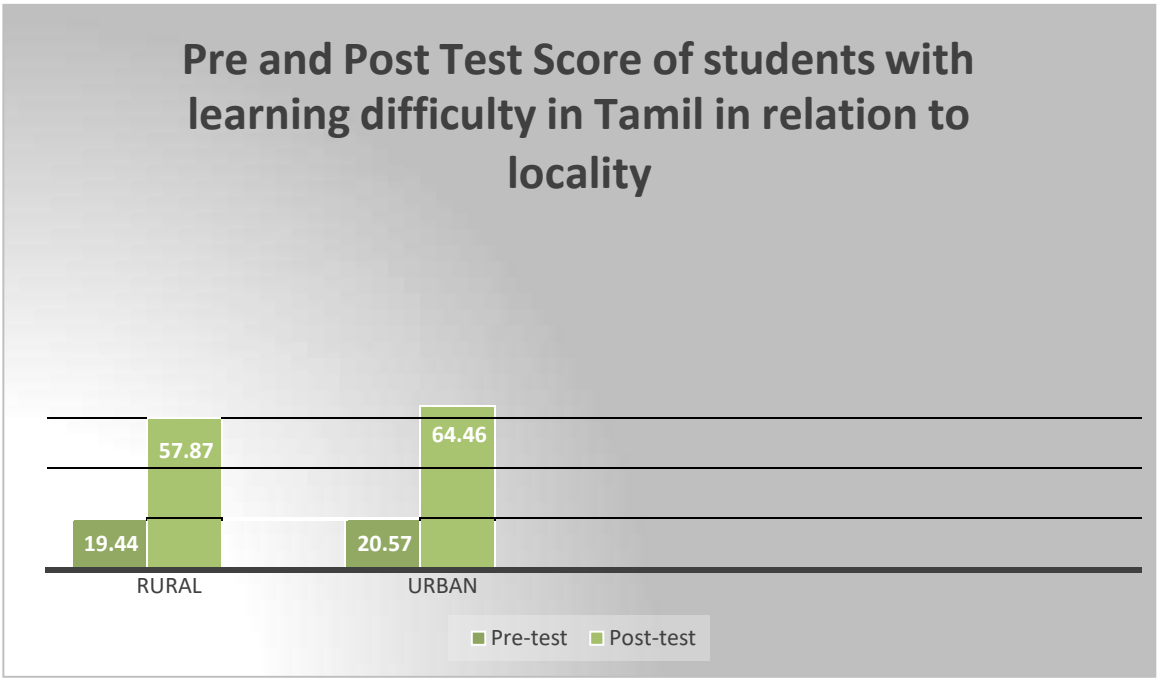


Figure 4.7 Pre and Post Test Score of Students with learning difficulties in Tamil in relation to locality

4.4.2 Analysis of Pre and Post Test Score of students with learning difficulties in English

The Pre and Post Test Score of with learning difficulties in English in relation Gender and Locality. *(Table 4.8)*

Ho: There is no significant difference in the Pre-test & Post- test score of students with learning difficulties in English with respect to gender

Table 4.8 Pre and Post Test Score of students with learning difficulties in English in relation to gender

Group	Type of test	Number	Mean	Std.dev	Df	't'-value	Sig
Experimental Group	Pre-Test	30	13.50	7.28	28	9.82	Sig**
	Post-Test		52.38	13.84			

Sig**- Significant

From the above table, it is obvious that the calculated 't'- value is 9.82 which is found to be significant at 0.05 percent level. It is clear that there is a there is a significant difference in the Pre-test & Post- test score of students with learning difficulties in English with respect to gender. Hence the "hypothesis *there is no significant difference in the Pre-test & Post- test score of students with learning difficulties in English with respect to gender*" is rejected. It infers that the computer assisted instruction used in teaching English along with other teaching Aids and Apps did brought about remarkable difference in the performance of students in English (both Reading and Writing skills).

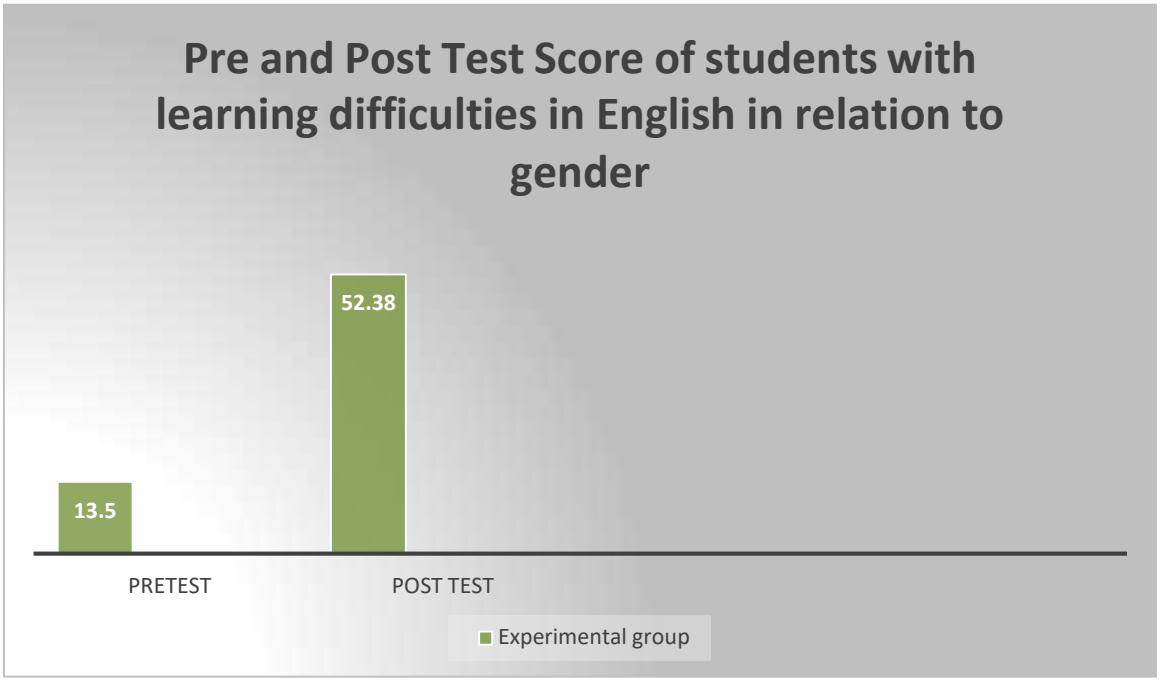


Figure 4.8 Pre and Post Test Score of students with learning difficulties in English in relation to gender

The Pre and Post Test Score of students with learning disability in English in relation to Locality *(Table 4.9)*

Ho: There is no significant difference in the Pre-test &Post- test score of students with learning disability in English with respect to locality.

Table 4.9 Pre and Post Test Score of Students with learning difficulties in English in relation to Locality

Locality	Type of test	Number	Mean	Std.dev	Df	't'-Value	Sig
Rural	Pre-Test	30	17.82	10.16	28	11.32	Sig**
	Post-Test		62.14	10.03			
Urban	Pre-Test		19.62	4.66		18.68	
	Post-Test		55.46	5.49			

Sig**- Significant

From the above table, it is evident that the calculated 't'- value is 5.5005 and 11.65 which is found to be significant at 0.05 percent level. It is clear that there is a there is a significant difference in the Pre-test& Post- test score of students with learning difficulties in English with respect to locality of the experimental group. Hencethe "hypothesis *there is no significant difference in the Pre-test & Post- test score of students with learning difficulties in English with respect to locality*" is rejected. It infers that the computer assisted instruction used in teaching Tamil along with other teaching Aids and Apps did brought about marked difference in the performance of students in Tamil (both Reading and Writing skills) irrespective of locality.

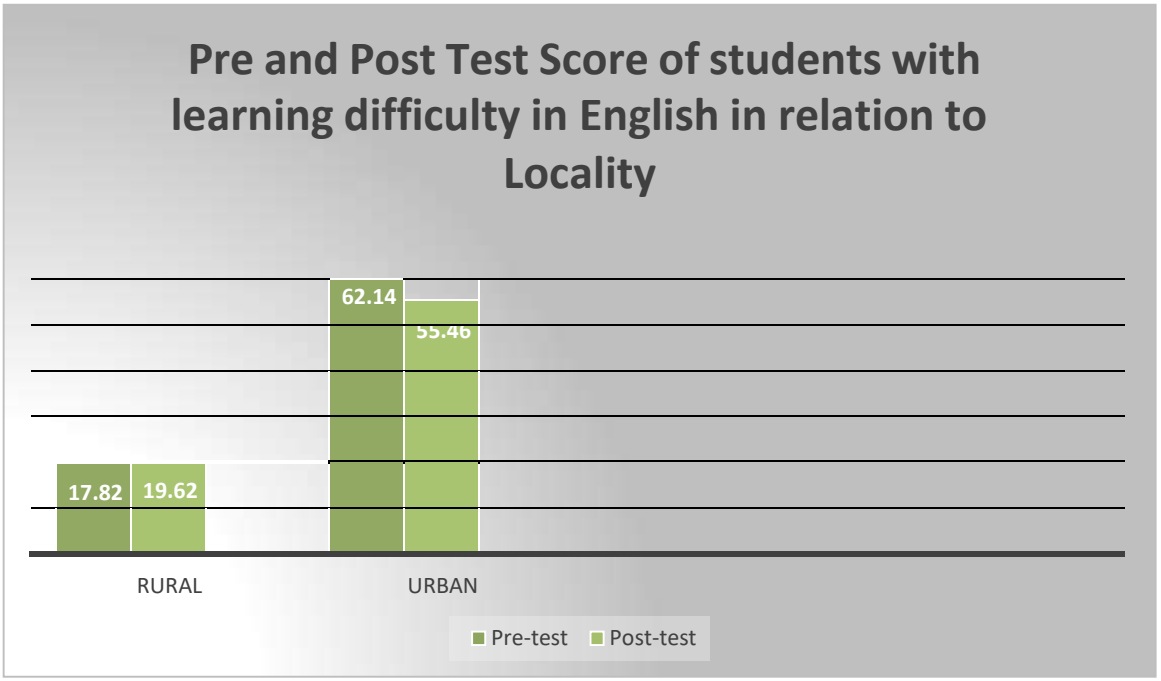


Figure 4.9 Pre and Post Test Score of students with learning difficulty in English in relation to Locality

4.4.3 Analysis of Pre and Post Test Score of students with learning difficulties in Mathematics

4.4.2.1 Pre and Post Test Score of students with learning difficulty in Mathematics in relation Gender and Locality*(Table 4.10)*

Ho: There is no significant difference in the Pre-test & Post- test score of students with learning difficulties In Mathematics with respect to gender.

Table 4.10 Pre and Post Test Score of students with learning difficulties in Mathematics in relation to Gender

Group	Type of test	Number	Mean	Std.dev	Df	't'- Value	Sig
Experimental Group	Pre-test	30	21.33	7.69	28	7.23	Sig**
	Post-Test		53.83	10.47			

Sig**- Significant

From the above table, it is clearly understood that the calculated 't'- value is 7.23 which is found to be significant at 0.05 percent level. It is clear that there is a there is a significant difference in the Pre-test & Post- test score of students with learning difficulties in mathematics with respect to gender. Hence the hypothesis "*there is no significant difference in the Pre-test & Post- test score of students with learning difficulties in Mathematics with respect to gender*" is rejected. It infers that the computer assisted instruction used in teaching mathematics did impact the confidence level in problem solving skills among students with learning difficulties in the core area of Mathematics.

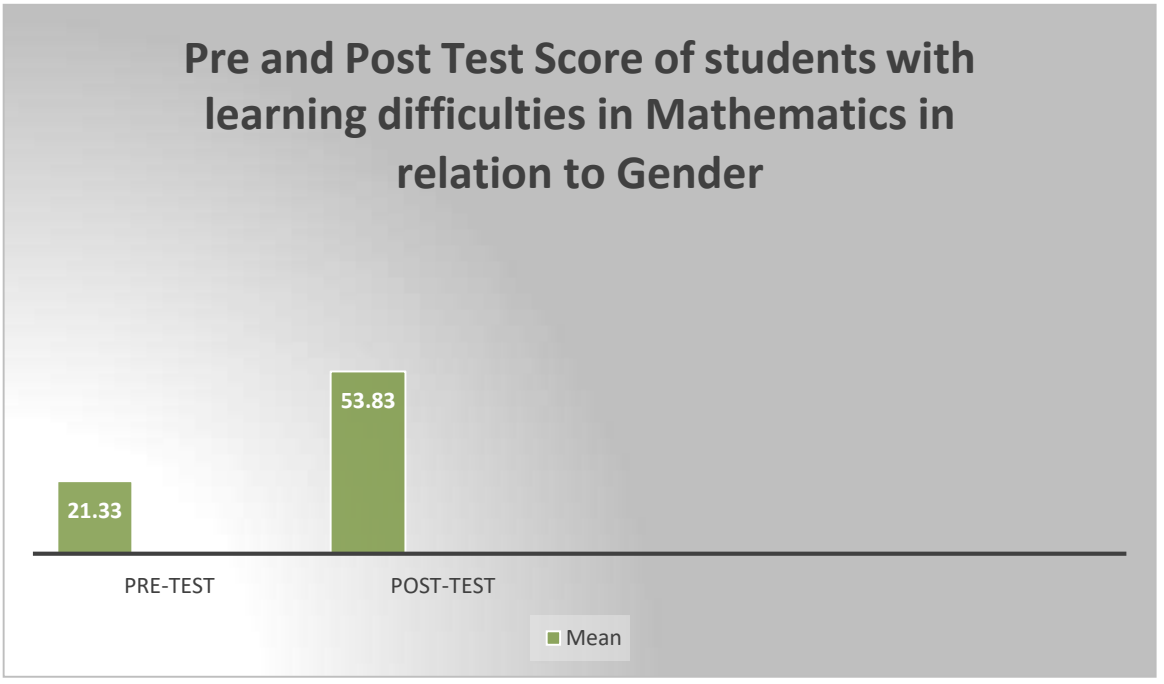


Figure 4.10 Pre and Post Test Score of students with learning difficulties in Mathematics inrelation to Gender

Pre and Post Test Score of students with learning difficulties in Mathematics in relation to Locality *(Table 4.11)*

Ho: There is no significant difference in the Pre-test & Post- test score of students with learning difficulties in Mathematics with respect to Locality.

Table 4.11 Pre and Post Test Score with learning difficulties in Mathematics in relation to Locality.

Locality	Type of test	Number	Mean	Std.dev	Df	't'- value	Sig
Rural	Pre-test	30	32.00	7.00	28	15.01	Sig**
	Post-test		90.17	13.71			
Urban	Pre-test		25.40	8.08		3.50	
	Post-Test		51.20	12.89			

Sig**- Significant

From the above table, it is clearly understood that the calculated 't'- value is 15.01 and 3.50 which is found to be significant at 0.05 percent level. It is clear that there is a there is a significant difference in the Pre-test & Post- test score of students with learning disability in mathematics with respect to locality. Hence the "hypothesis *there is no significant difference in the Pre-test & Post- test score of students with learning difficulties in Mathematics with respect to locality*" is rejected. It infers that the computer assisted instruction used in teaching mathematics did impact the confidence level in problem solving skills (concept wise) among students resides in the rural area than that of urban area.

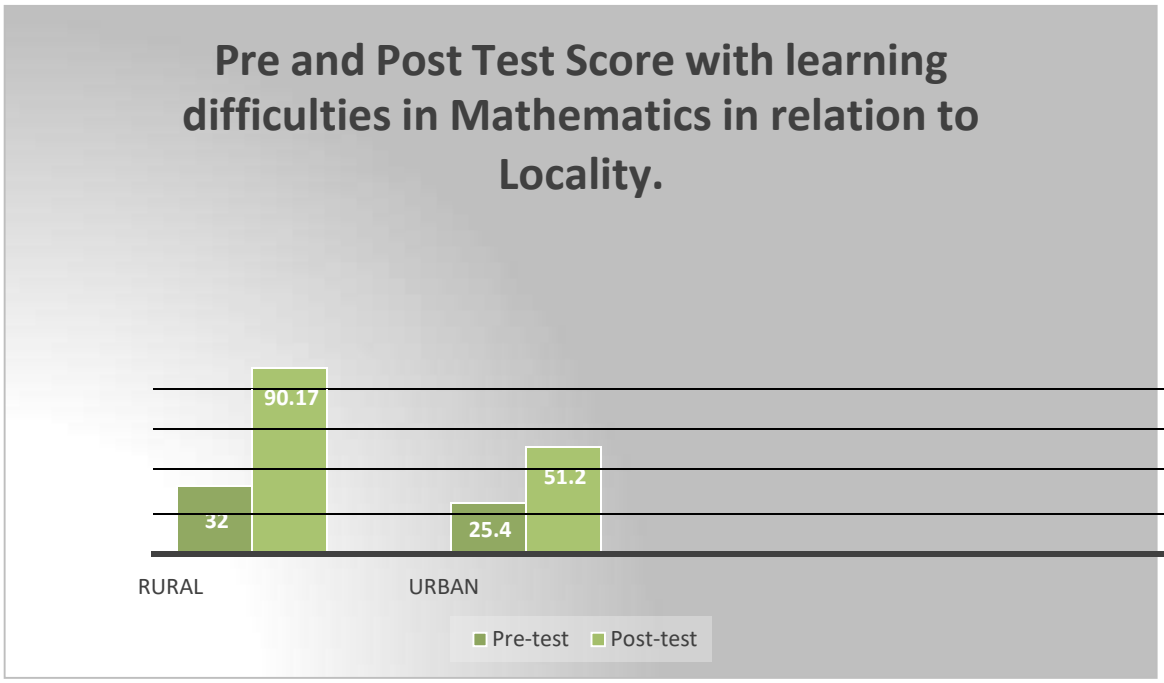


Figure 4.11 Pre and Post Test Score of students on learning difficulty in Mathematics inrelation to Locality

4.4.4. Analysis of Pre and Post Test Score of students on Intervention in Mathematics (Basicoperations and Computational Skills)

The Pre and Post Test Score of students on Intervention in Mathematics – Basic operations andComputational Skills in relation to gender and locality (Table 4.12)

Ho: There is no significant difference in the Pre-test & Post- test score of students with learningdifficulty in Mathematics both basic operations and computational skills with respect to gender.

Table 4.11 Pre and Post Test Score of students with learning difficulty in Mathematics in-Basicoperations and Computational Skills in relation to gender

Group	Type of test	Number	Mean	Std.dev	Df	't'-value	Sig
Experimental Group	Pre-test	30	21.33	7.69	28	7.23	Sig**
	Post-test		53.83	10.47			

Sig**- Significant

From the above table, it is evident that the calculated 't'- value is 7.23 which is found to be significant at 0.05 percent level. It is clear that there is a there is a significant difference in the Pre-test & Post- test score of students with learning difficulties in mathematics both general and computational skills like addition, subtraction, multiplication, division, equivalent fraction, the intervention had provided the needed impact on their learning outcomes using the intervention package which includes Apps, teaching aids with respect to locality. Hence the hypothesis *"there is no significant difference in the Pre-test & Post- test score of students with learning difficulties in Mathematics both general and computational skills" with respect to locality* is rejected. It infers that the computer assisted instruction used in teaching mathematics did impact the confidence level in problem solving skills of basic concepts as well as Computational skills among students.

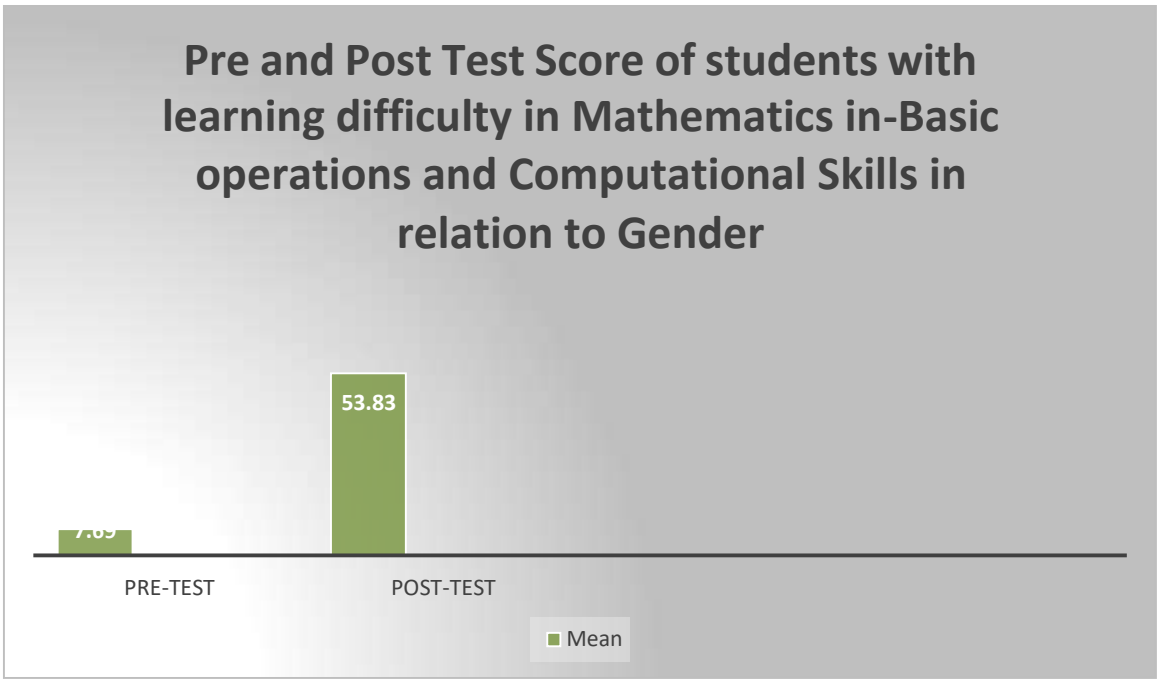


Figure 4.12 Pre and Post Test Score of students with learning difficulty in Mathematics in-Basicoperations and Computational Skills in relation to gender

Table 4.12 Pre and Post Test Score of students with learning difficulties in Mathematics in –Basic operations and Computational Skills in relation to locality of the locality

Locality	Type of test	Number	Mean	Std.dev	Df	't'-Value	Sig
Rural	Pre-test	30	16.96	6.59	28	10.34	Sig**
	Post-test		34.79	4.31			
Urban	Pre-test		5.27	3.73		11.59	
	Post-test		31.52	12.54			

Sig**- Significant

From the above table, it is evident that the calculated 't'- value is 10.34 and 11.59 which is found to besignificant at 0.05 percent level. It is clear that there is a there is a significant difference in the Pre-test & Post- test score of students with learning difficulties in mathematics both basic operations and computationalskills like addition, subtraction, multiplication, division, equivalent fraction, the intervention had providedthe needed impact on their learning outcomes using the intervention package which includes Apps, teaching aids with respect to locality. Hence the hypothesis *"there is no significant difference in the Pre-test & Post- test score of students with learning difficulties in Mathematics both basic operation and computational skills "with respect to locality group* is rejected. It infers that the computer assisted instruction used in teaching mathematics did impact the confidence level in problem solving skillsof basic concepts as well as Computational skills among students who resides in the urban area than that of the students resides in rural area.

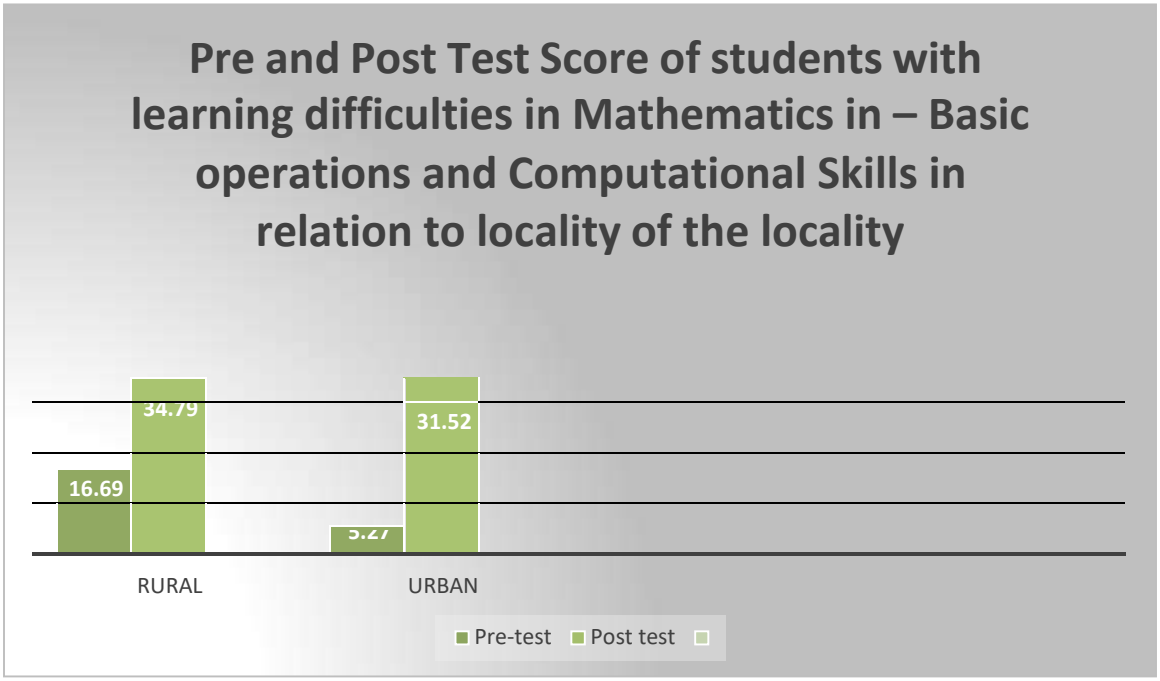


Figure 4.12 Pre and Post Test Score of students with learning difficulty in Mathematics in-Basic operations and Computational Skills in relation to gender

Conclusion

The detailed analysis and interpretation of the data collected along with the pictorial representation is presented in this chapter. A summary of the Findings, Recommendations, Educational Implications and Conclusion are presented in the next chapter.

SUMMARY AND CONCLUSION

Chapter 5

Summary and Conclusion

In this chapter a summary of findings of the study "**Effect of Computer Assisted Instructions to Enhance Literacy Skills among Students with Learning Difficulties at Secondary Level**" is presented on the basis of statistical interpretation given in the previous chapter.

5.1 SUMMARY OF THE FINDINGS

The investigator selected 60 samples from two schools in Coimbatore district. Theinvestigator have used the random sampling method was used for the collection of data.

The investigator used a self-made tool was used for analyzing Effect of Computer Assisted Instructionsto Enhance Literacy Skills among Students with Learning Difficulties at Secondary Level. Personaldata sheet with required details were also used. The data were analyzed and henceforth the conclusions were drawn.

- Cent percent of teachers from the selected schools were female who taught Tamil, English and Mathematics.
- Cent percent of teachers from both schools were with B.Ed.
- There is a marginal difference in age category between 11 years to 13 years.
- More than 75%of teachers had 15 years of teaching experience in the teachingfield. Monthly income was obtained based on their age, experience and qualification.
- Majority of teachers had 15 years of experience and received an average amount ranging from Rs.52, 000 – Rs.49,000.
- Cent percent of the type of schools chosen were Government Aided Schools.
- Cent percent of students from the selected schools were female who are studying Tamil, English and Mathematics.
- There is a marginal difference in age category between 11 years to 13 years.
- The calculated 't'- value is 12.86 which is found to be significant at 0.05 percent level. It is clear that there is a there is a significant difference in the Pre-test & Post- test score of with learning difficulties in Tamil with respect to gender. Hence the hypothesis "*there is no significant difference in the Pre-test & Post- test score of students with learning difficulties in Tamil withrespect to gender*" is rejected. It infers that the computer assisted instruction used in teaching Tamil along with other teaching Aids and Apps did brought about marked difference in the performance of the students with learning difficulties in Tamil in Tamil(both Reading and Writing skills)
- The calculated 't'- value is 5.5005 and 11.65 which is foundto be significant at 0.05 percent level. It is clear that there is a there is a significant difference in the Pre- test& Post- test score of students with

learning difficulties in Tamil with respect to locality. Hence the "hypothesis *there is no significant difference in the Pre-test & Post- test score of students with learning difficulties in Tamil withrespect to locality"* is rejected. It infers that the computer assisted instruction usedin teaching Tamil alongwith other teaching Aids and Apps did brought about marked difference in the performance of students inTamil (both Reading and Writing skills) irrespective of locality.

- The calculated 't'- value is 9.82 which is found to be significantat 0.05 percent level. It is clear that there is a there is a significant difference in the Pre-test & Post- test scoreof students with learning difficulties in English with respect to gender. Hence the "hypothesis *there is no significant difference in the Pre-test & Post- test score of students with learning difficulties in English with respect to gender*" is rejected. It infers that the computer assisted instruction used in teaching English alongwith other teaching Aids and Apps did brought about remarkable difference in the performance of students in English (both Reading and Writing skills).
- The calculated 't'- value is 5.5005 and 11.65 which is found tobe significant at 0.05 percent level. It is clear that there is a there is a significant difference in the Pre-test& Post- test score of students with learning difficulties in English with respect to locality of the experimental group.Hencethe "hypothesis *there is no significant difference in the Pre-test & Post- test score of students with learning difficulties in English with respect to locality*" is rejected. It infers that the computer assisted instruction used in teaching Tamil along with other teaching Aids and Apps did brought about marked difference in the performance of students in Tamil (both Reading and Writing skills) irrespective of locality.

- The calculated 't'- value is 7.23 which is found tobe significant at 0.05 percent level. It is clear that there is a there is a significant difference in the Pre-test & Post- test score of students with learning difficulties in mathematics with respect to gender. Hence the hypothesis "*there is no significant difference in the Pre-test & Post- test score of students with learning difficulties in Mathematics with respect to gender*" is rejected. It infers that the computer assisted instruction used in teaching mathematics did impact the confidence level in problem solving skills among students with learning difficulties in the core area of Mathematics.

- The calculated 't'- value is 15.01 and 3.50 which is found to be significant at 0.05 percent level. It is clear that there is a there is a significant difference in the Pre-test & Post- test score of students with learning disability in mathematics with respect to locality. Hencethe "hypothesis *there is no significant difference in the Pre-test & Post- test score of students with learning difficulties inMathematics with respect to locality*" is rejected. It infers that the computer assisted instructionused in teaching mathematics did impact the confidence level in problem solving skills (concept wise) amongstudents resides in the rural area than that of urban area.

- The calculated 't'- value is 7.23 which is found to be significant at 0.05 percent level. It is clear that there is a there is a significant difference in the Pre-test & Post- test scoreof students with learning difficulties in mathematics both general and computational skills like addition, subtraction, multiplication, division, equivalent fraction, the intervention had provided the needed impact on their learning outcomes using the intervention package which includes Apps, teaching aids with respect to locality. Hence the hypothesis *"there is no significant difference in the Pre-test & Post- test score of students with learning difficulties in Mathematics both general and computational skills" with respect to locality* is rejected. It infers that the computer assisted instruction used in teaching mathematics did impact the confidence level in problem solving skills of basic concepts as well as Computational skills among students.
- The calculated 't'- value is 10.34 and 11.59 which is found to besignificant at 0.05 percent level. It is clear that there is a there is a significant difference in the Pre-test & Post- test score of students with learning difficulties in mathematics both basic operations and computational skills like addition, subtraction, multiplication, division, equivalent fraction, the intervention had providedthe needed impact on their learning outcomes using the intervention package which includes Apps, teaching aids with respect to locality. Hence the hypothesis *"there is no significant difference in the Pre-test& Post- test score of students with learning difficulties in Mathematics both basic operation and computational skills "with respect to locality group* is rejected. It infers that the computer assisted instruction used in teaching mathematics did impact the confidence level in problem solving skills of basic concepts as well as Computational skills among students who resides in the urban area than that of the students resides in rural area.
- An overall analysis of pretest mean score on intervention in Tamil- Reading and Writing among the selected students over the posttest reveals a better and higher mean scores using available apps like Agaram Tamil Teacher, Tamil kids learning, Tamil Grammar-Easy.
- On the whole the impact of intervention was noticed between Class level and between schools withalmost & an increase by over double their performance comparing the Pretest Mean score which was quite encouraging and writing skills developed in English language.
- A remarkable confidence was gained by the samplein problem solving skills - concept wise and in skills on intervention. Observing a distinct difference in terms of the Pre and Post test score obtained by the students in problem solving skills both in basic operations, Math concepts such as proper fractions, Improper fractions, Mixed fractions and solving higher level basic computational problems revealed the fact that technology intervention provided using the available software's like Visual fractions, Fraction mash, Khan Academy with other aids, Apps and devices did bringabout the needed impact on their learning outcomes.
- Use size to compare two fractions that have the same denominator or numerator. Understand that comparisons can only be made when both fractions are referring to the same whole. Keep track of the

outcomes of comparisons with the symbols >, =, or, and then use a visual fraction model to explain the conclusions.

- Basic operations like Addition, Subtraction, multiplication and division in fractions are also taught using Computer Assisted Package and it has been a self- learning package.

5.2 Educational Implications

- The present study has substantially established that, Computer assisted Instruction significantly enhances the literacy skills among students. In the present curriculum the computer education has been introduced at the school level. Teachers should use computers as media of instructions in the classroom.
- Computer assisted instruction method can be used in classrooms, as it provides maximum amount of clarity and flexibility. Subject teachers should be acquainted with the use of variety of methods and procedures for teaching. Teachers should be provided with proper training.
- Computer assisted Instruction can be used by the students as a self-learning package to learn the school syllabus. It exposes the students to a new atmosphere in which they can interact with the Instruction Assisted material by learning on their own pace.
- In order to make the students enjoy learning, specific audio, videos and animations could be added to the Instructional Assisted material which provides education to a larger group at a time in a higher personalized manner.
- Computer Assisted Instructional material provides multi-sensory experiences and also different type of learning environment to the students.
- Computer Assisted Instructional worksheets reduces the time taken for manual question paper setting and Evaluation for the teachers.
- Computer Assisted Instructional worksheets reduces the mental pressure undergone student preparing during examination.
- Teacher preparedness can be a huge factor with any instruction, but with technology it is even more so. Teachers need to have adequate training in the usage of computer-based instruction in order for their students to be successful.
- It will provide all students with the opportunities to fill the holes they were missing from the other form of instruction.

5.3 SUGGESTIONS

A study would be incomplete if it provides necessary guiding as well as potential research topics for further exploration. In the present study, an attempt was made to find the "Effect of Computer Assisted Instructions to Enhance Literacy Skills among Students with Learning Difficulties at Secondary Level". The following suggestions are made for the further research in this area.

- This study was conducted in only one district, it can be extended to other districts.
- The present study has been conducted only for VIth standard students, it can be extended to other standard students.
- A similar study could be carried out to large sample.
- Technical difficulties faced by Teachers while adapting the computer assisted instructional approach can be studied.
- Technical difficulties faced by students while adapting the computer assisted instructional approach can be studied.

5.4 CONCLUSION

Schools play an important role in identifying the learning disabilities of the students. School children with Learning Difficulties are found to be about 5-8 percent in every classroom. They do not normally acquire the basic skills of reading, writing and arithmetic from regular classroom set up. The child is expected to read fluently, copy notes from the black board, write essays and answer questions on a given passage. Evidence accumulated over the past two decades suggest that many students with Learning Difficulties experience social and academic difficulties in both general and remedial classroom intended to support their success.

Classroom environment come in all shapes and sizes and are dominated by social activities and relationships. It is within the classroom and early school years most children at secondary level experience failure and a sense of learned helplessness. Regular teachers normally move forward and embrace the opportunities that Assistive devices and technology to the classroom. This project thus guides the teachers to use the Computer Assistive Technology in improving the literacy skills among young children scientifically proved to be helpful strategy for all students at secondary level, specifically focused towards enhancing literacy skills in Tamil, English and Mathematics the basics aiming at expected learning outcomes. The results from the study allows the researcher to believe that the computer- assisted instruction programs to enhance literacy skills among students with learning difficulties at secondary level are beneficial for students' overall academic achievement, as well as improve student attitudes towards Self

teaching and learning package.

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APPENDICES
PERSONAL DATA SHEET

Name of the Student:
மாணவரின் பெயர்:

Gender: Male / Female
பாலினம்: ஆண்/பெண்

Age:
வயது:

Class:
வர்க்கம்:

School:
பள்ளி:

Medium of Instruction: Tamil / English
பயிற்று மொழி: தமிழ் / ஆங்கிலம்

Type of School: Government / Private
பள்ளி வகை: அரசு / தனியார்

Subject Interested:
விருப்பமான பாடம்:

Type of your family: Nuclear / Joint
குடும்பத்தின் வகை: அணு / கூட்டு

Type of your area: Rural / Urban
பகுதியின் வகை: கிராமம் / நகர்ப்புறம்

Position of the student in the family: குடும்பத்தில் மாணவரின் நிலை:

S.NO வரிசை என்	**FAMILY MEMBERS** குடும்ப உறுப்பினர்கள்	**SEX** பாலினம்	**RELATION WITH STUDENTS** மாணவர்களுடனான உறவு	**OCCUPATION** தொழில்

TAMIL

1. READING COMPREHENSION- *வாசித்து புரிந்துகொள்ளுதல்*– [5]

மாமல்லபுரம்

கீழ்க்கண்ட பத்தியைப் படித்து பின்வரும் வினாக்களுக்கு விடையளி :

ஐந்து இரதங்கள் உள்ளதால் இவ்விடத்திற்குப் பஞ்ச பாண்டவர் ரதம் என்று பெயர்.இவையெல்லாம் என் காலத்தில் உருவாக்கப்பட்டவை என்றார் மாமல்லர்.

வியப்பாக உள்ளதே ! நீங்கள் நீண்ட காலத்துக்கு முன்பு வாழ்ந்தவர் அல்லவா ?

"ஆமாம் கயல்.நான் ஏழாம் நூற்றாண்டைச் சேர்ந்தவன்."

"இவற்றை உருவாக்குவதற்குக் கற்களை எங்கிருந்து கொண்டு வந்தீர்கள் ?'

" இங்கயே இருந்த பாறைகளில் தான் இவற்றை உருவாக்கினோம் "

வினாக்கள் :

1 ---------- இரதங்கள் உள்ளதால் இவ்விடத்திற்குப் பஞ்ச பாண்டவர் ரதம் என்று பெயர்

அ) 5 ஆ) 7 இ) 9

2. யாருடைய காலத்தில் இவை உருவாக்கப்பட்டவை ?

அ) மாமல்லர் ஆ) மகேந்திர வர்மர் இ) ராஜ ராஜ சோழன்

3. மாமல்லர் எந்த நூற்றாண்டைச் சேர்ந்தவர் ?

அ) ஆறாம் ஆ) ஏழாம் இ) எட்டாம்

4. சிற்பங்கள் செய்ய கற்கள் எங்கிருந்து கொண்டு வரப்பட்டது ?

அ) அங்கிருந்த பாறைகள் ஆ) வெளிநாட்டில் இருந்து இ) இமயமலையில் இருந்து

5.இரதம் என்ற சொல்லின் பொருள் யாது ?

அ) பாறை ஆ) வண்டி இ) தேர்

2. SENTENCE CONSTRUCTION- வாக்கியம் கட்டுமானம் **[5]**

உங்கள் செல்லப்பிராணியைப் பற்றி 5 வாக்கியங்களை எழுதுங்கள்.

3. LETTER DIFFERENTIATION-எழுத்து வேறுபாடு **[10]**

தகுந்த சொற்களைத் தேர்ந்தெடுத்து எழுதுக:

அவர்கள்	நாம்	உன்	என்	உமது
இவன்	நீ	அவள்	நீங்கள்	அவன்

1. _____ மிகவும் நல்லவள்.
2. _____ அனைவரும் நல்ல உழைப்பாளிகள்.
3. _____ வீடு எங்கு உள்ளது?
4. இது _____ புத்தகம்.
5. _____ என்னுடைய நண்பன்.
6. _____ மிகவும் நல்லவர்.
7. _____ அனைவரும் விளையாடச் செல்வோம்.
8. _____ வீடு எப்படி இருக்கும்?
9. _____ எங்கு இருந்து வருகிறாய்?
10. _____ நாளை ஊருக்கு செல்கிறான்.

4. DEVELOP THE HINTS AND WRITE A STORY-குறிப்புகளை வைத்து ஒரு கதையை எழுதுங்கள் [5]

விவசாயி ..... கோழி..... தங்க முட்டை..... விற்று பணக்காரனானான் . ..... பேராசை கொண்ட .....அனைத்து முட்டைகளையும் ..... கோழியைக் கொன்றது . ..... முட்டை கிடைக்கவில்லை.

1. CONJUNCTIONS- [5]

1. We were happy ..... we have bought a new car. (because, if)
2. The parents were listening eagerly ..... the principal was speaking. (while, but)
3. This is the place ..... we were attacked. (when, where)
4. ..... he works hard, he will succeed. (even, if)
5. You wait here ..... I come. (until, if)

2. JUMBLED SENTENCES [10]

Rearrange the words to make meaningful sentences:

1. giant/in/a/house/lived/big/a
   _____
2. house/had/the/garden/a/beautiful
   _____
3. let/enter/he/anyone/never/garden/his
   _____
4. would/whenever/children/he/come/some/was/away
   _____
5. decided/giant/one day/the/to/his/visit/friend
   _____
6. after/came/he/seven/back/years
   _____
7. children/playing/he/in/saw/the/garden/his
   _____
8. angrily/them/he/away/chased
   _____
9. around/high/he/a/the/wall/built/garden
   _____
10. trees/flowers/all/lost/their/the/beauty/and
    _____

3. READING COMPREHENSION [5]

Abraham Lincoln

Read the passage. Then answer the questions.

Abraham Lincoln was born in 1807 in Kentucky to Thomas and Nancy Lincoln. When Abe was just nine years old, his mother died and his sister Sarah took care of him until his father remarried. Lincoln had less than a year of schooling. The family owned a Bible and he spent many hours reading it. By the time he was 17, he knew he wanted to be a lawyer. When he was 21 years old he moved to Illinois and spent a year laboring on a farm. When he was a shopkeeper he tried to be honest and fair. He still wanted to be a lawyer. In 1836 he passed the test and became a lawyer. It was during this time he was elected to the Illinois legislature by the Whig party. He became good at debating and public speaking. Lincoln was inaugurated president in March of 1861. Five weeks later the Civil War began. Lincoln wanted the United States to remain one nation. Two years later, President Lincoln wrote: "My paramount object in this struggle is to save the Union, and is not either to save or to destroy slavery." He was able to realize both of his goals. In 1863 he issued the Emancipation Proclamation freeing the slaves in the Southern states, and the country was able to remain a united nation. Eventually all the slaves in the United States became free. On April 14, 1865 President Lincoln and Mrs. Lincoln were attending a play at Ford's Theater in Washington D.C. While there he was assassinated and died nine hours later. The events that occurred during the time that Abraham Lincoln was president included the attack on Fort Sumter and the start of the Civil War (1861 -1863), the Emancipation Proclamation (1863), the Conscription Act (1863) and the Gettysburg Address (1863).

<u>Answer each question.</u>

1. What do you know about Abraham Lincoln's early life?
2. What did Lincoln do before 1836?
3. What did Lincoln say and what did he do about the Civil War?
4. How was Lincoln assassinated?
5. Write the achievements of Abraham Lincoln?

4. REFER TO DICTIONARY AND FIND OUT THE MEANING [5]

kerchief _____

requiem _____

evict _____

poise _____

Sample _____

1.ADD THE FOLLOWING **[10]**

Solve the equations.

1. $\frac{3}{5} + \frac{1}{4} =$ _____
2. $\frac{2}{3} + \frac{1}{10} =$ _____
3. $\frac{1}{6} + \frac{4}{11} =$ _____
4. $\frac{1}{9} + \frac{3}{8} =$ _____
5. $\frac{1}{3} + \frac{5}{15} =$ _____
6. $\frac{2}{8} + \frac{4}{11} =$ _____
7. $\frac{5}{10} + \frac{8}{9} =$ _____
8. $\frac{3}{5} + \frac{6}{20} =$ _____
9. $\frac{4}{10} + \frac{7}{12} =$ _____
10. $\frac{9}{12} + \frac{5}{24} =$ _____

2. SUBTRACT THE FOLLOWING **[10]**

Solve the equations.

1. $\frac{1}{2} - \frac{1}{11} =$ _____
2. $\frac{4}{6} - \frac{2}{6} =$ _____
3. $\frac{1}{3} - \frac{1}{4} =$ _____
4. $\frac{2}{3} - \frac{3}{8} =$ _____
5. $\frac{2}{3} - \frac{1}{4} =$ _____
6. $\frac{4}{6} - \frac{4}{8} =$ _____
7. $\frac{2}{8} - \frac{1}{8} =$ _____
8. $\frac{2}{4} - \frac{2}{7} =$ _____
9. $\frac{7}{9} - \frac{13}{21} =$ _____
10. $\frac{9}{15} - \frac{1}{2} =$ _____

3. MULTIPLICATION AND DIVISION OF FRACTION **[10]**

① $\frac{3}{8} \times 3 =$

② $\frac{1}{5} \div 8 =$

③ $\frac{1}{18} \times 16 =$

④ $\frac{11}{12} \times 6 =$

⑤ $\frac{9}{8} \div 18 =$

⑥ $\frac{2}{10} \div 9 =$

⑦ $\frac{20}{26} \times 5 =$

⑧ $\frac{21}{24} \div 6 =$

⑨ $\frac{9}{72} \times 8 =$

⑩ $\frac{18}{21} \times 35 =$

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Coimbatore – 641043, Tamil Nadu, India

School of Education
Ayya Avinashilingam Nagar
Varappalayam,
Coimbatore – 641 108
Mrs. S. S. Manimozhi
HOD(I/c), Department of Education

To

The Headmistress,

Sri Avinashilingam Higher Secondary School for Girls,

Coimbatore.

Dear Madam,

Sub: Seeking Permission for Data Collection M.Ed Thesis regarding

As part of the M.Ed Curriculum, our M.Ed student is required to undergo the research work. In this regard we request you to kindly permit the following student for collecting data in our institution from January 2023-April 2023. We look forward to support us to help the students for timely completion of their thesis.

Details of the student is enlisted below

S.No	Name	Topic
1.	Shanu H S 21PED006	Effect of Computer Assisted Instructions to enhance literacy skills among students with Learning Difficulties at Secondary Level

Thanking You

29/11/22

With Regards,

S S Manimozhi