CHAPTER I

THE PROBLEM - ITS SPECIFICATION

CHAPTER ONE

THE PROBLEM - ITS SPECIFICATIONS

1.0.0 INTRODUCTION

To help pupils acquire language competencies, different educationists advocate different approaches. They introduce different methods, media and modes of presentation in order to nurture and develop the elements of language and communication in the pupils. To help pupils in primary and pre-primary stages, a number of institutions are using different methods and media. Teachers in some institutions are using picture book, music in audio system and text in hand written form to help pupils learn joyfully. They use a combination of different modes to help pupils in the process of learning. A skilled person in graphics, music text and their mix is required to help children in joyful learning.

Any language has a matrix of language elements, viz., phonetics, grammar (syntax) and vocabulary on one side and language skills, listening, speaking, reading, and writing on the other side. There are various objectives of language learning, such as, development of vocabulary, analytical understanding, comprehensive understanding, recitation ability, listening, speaking, reading and writing (LSRW) ability. For achieving the objectives of language learning we are teaching children in the form of rhymes, songs, poems, story, etc The intuitive stage of cognitive growth (4-7) year is the prime stage for language development. Then the question is which methods, media and modes should be used for language development in this stage. Computer is a powerful medium. It has many attributes required for instruction, viz., storage in the form of text, music, graphics, and animation. Subject matter can be created on computer in various modes, such as, Text, Text Music, Text Graphics, Graphics Text Music etc. and stored and retrieved suitably at the time of need.

There is a need to develop Computer Assisted Learning Material for pupils. It requires the knowledge of contents, pedagogic principles, competencies in programming and using computer as a medium. Computer Assisted Learning Material may help in realisation of the objective of joyful learning of the pupils through text, music, graphics, animation and sound visual effects.

1.1.0 ENGLISH AS A SECOND LANGUAGE

In terms of reading, English Second Language (ESL) readers are less familiar with the semantic and syntactic constrains of the second language Comprehension suffers

because the child can not identify and exploit syntactic relations or use semantic context as a guide to prediction as effectively as natives The second language reader does not possess significant knowledge of the language on text and therefore has a greater tendency to make graphophonic miscues and substitute words that do not maintain the meaning of the text. They have a deficiency in vocabulary of the target language due to the problems in building a body of visual word representations that can only be constructed if the meaning of the word is known. Grabe (1987) proposed that the lack of a large vocabulary that can be read rapidly, accurately and automatically accessed may be the greatest single impediment to fluent reading by ESL reader.

Background knowledge is necessary if full comprehension of a Text is to occur; however, this type of knowledge is culture specific. A child from an ethnic minority will not have the same complex package of beliefs, knowledge, feeling, attitudes, and behaviour as a native child and hence interprets texts significantly and with difficulty. Fluent reading entails both skillful decoding and relating information to reader's prior knowledge of the subject and the world. Reader in ESL must develop a large vocabulary, basic syntactic structures and higher level interpreting strategies (including background knowledge, schematic inference and comprehension strategies) if they are to master the reading process. The language experience approach is consistent with Schema theory. Because it uses child's experiences as the basics for written languages, the child necessarily has schemata to comprehend the material and can thus develop a Schema for reading that includes that idea the written words have meaning (Hacker, 1980).

With the language experience approach, reading grows out of nature, it is an ongoing activity. Children can see the relationships between reading and their oral language. This approach helps them to visualise reading as "talk written down" and offers good opportunities for developing the concepts of writing, word, and sentence. During the language experience process, children see the transformation from oral language to print take place, including directionality, the spacing between words, and punctuation and capitalisation. Framing the individual language units with the hands is also helpful in illustrating their meanings (Blass, Jurenka, and Zirzow, 1982).

1.1.2 THE LANGUAGE ARTS FOR YOUNG CHILDREN

Research in human growth and development, and learning reveals that for most physical and emotional normal human beings, learning to communicate beyond the stage of crying or random bobbing involves learning to listen, to speak, and to write, in the order listed. Listening and speaking serve as a base for reading and writing and, if rooted in experience, furnish a rich background of meaning for written and printed symbols.

The language is the part of daily living and is functional in every activity and experience. Speaking, listening, reading, and writing are interrelated and the skills are developed as the child participates in many varied activities throughout the day - at home as well as at school.

Growth in vocabulary of the young child has been studied by a number of investigators whose reports indicate discrepancies in the estimated size of the children's vocabularies. These differences may be due to the type of vocabulary test used, the definition of "word" adopted, and whether both the use and recognition vocabularies were studied. One of the early vocabulary studies was done by Madorash Smith in 1926. Her estimated size of the vocabulary of young children have been widely utilised She found the vocabulary to consist of 896 words at three years, 1,540 at four, 2,072 at five and 2,562 at six. In the 1950's Lobon found that at kindergarten level, subject varied in vocabulary from 180 to about 5,000 words with 3,00 words as the average. Since Smith's study, changes may have occurred in the speech of young children as a result of increased TV viewing, number of experiences, and changes in child rearing practices.

More mature speech is interpreted as the use of fewer one-word remarks and simple and incomplete sentences and the use of more complex sentences and adverbial clauses. By the age of three, a child's articulation improves and becomes fairly clear. There is a sequence in the child's ability to pronounce the consonant sounds and an understanding of this may be of help to parents and teachers Before entering school, children have had tremendous practice with spoken language. Estimates of the number of words spoken per day by the child range from 7,500 at three years to 10,500 at five. the child has thus developed much of his skill in speaking before he receives any formal instruction. Noel

states that by the time the child arrives at school age, he has already learned to speak with whatever sound system, grammar, and vocabulary he has heard most often at home or in his neighborhood Other studies by Loban and Srtickland confirm the fact that the language patterns of children are largely set by the time they reach school. Some children have had a lush environment and many experiences while others have had a meager background. Some children entering nursery school or kindergarten able to speak fluently and distinctly while others know and use few words. The size of the vocabulary and the ability to articulate sound vary from child to child.

Gesell describes the age of four as the flowering period of language. The child talks incessantly, plays with words, like silly language, tells fanciful tales, and asks many questions. The five-year-old likes to talk. He is inquisitive, seeks information, and asks many questions. He can narrate incidents and tell familiar stories in sequence. The five year old are beginning to show an awareness of logical standards and to use language appropriate for the situation. "Please", "excuse me", " I'm sorry', are becoming a part of their speech. As the five-year-old encounters new experiences in kindergarten and makes the necessary adjustments, pressures may be reflected in his speech, he may temporarily revert to patterns of speech practiced at an earlier age.

The central factor in reading is comprehension of the material read. Since reading is an interactive process that involves both the information brought to the text by readers and the information supplied by the text, good comprehension depends upon reader's background of experience as well as their facility with various comprehension skills that help them unlock the meanings within the text. The schemata built through these experiences aid the comprehension of printed material. Readers must learn to comprehend sentences, paragraphs, and whole selections. Sentences that are complex, contain relative clauses, are in the passive voice, contain pronouns, have missing words, have implied relationships, or express negation may need special attention because students may have difficulty in comprehending them. The meaning conveyed by punctuation in sentences should also receive attention Students also need help in understanding the functions and organizational patterns of paragraphs. They then have to understand the ways that whole selections are organised and how prereading, during reading, and postreading activities can foster comprehension of these selections. Prereading activities such as previews,

computer use, anticipation guiders, the VPL (Vocabulary, Oral Language, and Prediction), approach and semantic mapping can be helpful. Metacognitive strategies, questioning, and the close procedure are among the techniques that can be used during reading. Postreading activities usually involve extending knowledge on the topic and questioning Some activities, such as, semantic webbing and story mapping, story grammar and story frame activities, other story structure techniques, and writing activities related to reading may be involved in prereading, during reading, and postreading activities at various times.

Four types of comprehension are there. These are literal reading which is reading for directly stated ideas; interpretive reading is reading for implied ideas; critical reading is reading for evaluation; and creative reading is reading beyond the lines. Teachers can generally teach skills in all of these areas most effectively through explanation and modeling; guided student practice, and independent student practice.

Questioning techniques are important to instruction because teachers use questions to provide purposes for reading, to elicit and focus discussion, and to check comprehension of material read. Question may be based on comprehension skills or story structure. Students may need to be taught how to approach answering questions. Self questioning by the reader is also a valuable comprehension monitoring technique. Teacher can help students develop the skills of self-questioning.

Development of meaning vocabulary is the development of levels for the schemata, or organised knowledge structures that a person possesses. Because vocabulary is an important component of reading comprehension, direct instruction in vocabulary can be helpful in enhancing reading achievement. Although pinpointing the age at which children learn the precise meanings of words is difficult, children generally make more discriminating responses about word meanings as they grow older, and vocabulary generally grows in the increasing age.

There are many ways to approach vocabulary instruction. Techniques that link new terms to the children's background knowledge, that actively involve them in learning, and help them become independent in acquiring vocabulary tend to be best. Techniques that cause children to work harder to learn words tend to aid retention Teacher may need to spend time on concept development before working with specific vocabulary terms

Vocabulary development should be emphasised throughout the day, not just in reading and language classes, children can learn much vocabulary use. Context clues, structural analysis, categorization, analogies and word lines, semantic maps and word webs, semantic feature analysis, dictionary use, study of word origin and histories, study of denotations and connotation of words, a number of student centred learning techniques, word play, and computer techniques can be helpful in vocabulary instruction. Some special types of words can cause comprehension problems for children. They include homophones (homonyms), homographs, synonyms, antonyms, and newly coined words

Meaning of vocabulary is essentially the set of labels for the clusters of concepts that people have learned through experience. These clusters of concepts on knowledge structures are called schemata. Because students must depend upon their existing schemata to comprehend, meaning vocabulary development is an important element of comprehension (Jones,1982). Therefore, direct instruction in word meanings is a valuable part of reading instruction.

Decoding words and developing a sight vocabulary have little value if students do not understand the words. Children's sight vocabularies should be built from words they already comprehend, words that are a part of their meaning vocabularies and the difficulties that certain types of words may present to youngsters.

1.1.3 OBJECTIVES OF LANGUAGE LEARNING

At the primary stage, the main objectives of language learning are to :

- be able to listen with understanding;
- be able to speak effectively in both informal and formal transaction;
- be able to read with comprehension and enjoy reading various kinds of instructional materials;
- be able to write neatly, with logical sequence and creatively;
- be able to comprehend ideas through listening and reading and;
- be able to use grammar functionally in various contexts.

1.1.4 MINIMUM LEVEL OF LEARNING (MLL) IN LANGUAGE

At the primary level, language occupies a pivotal place in the curriculum. The basic skills acquired through language learning facilitate learning of concepts in other areas. Moreover, in the shaping of the personality of the child and in all his/her effective transactions in the day to day life situations, the nine basic language skills, namely, listening, speaking, reading, writing, comprehension of idea (through listening and reading), functional grammar, self learning, language use, and vocabulary control play significant roles

1.1.5 STATEMENT OF MLL IN LANGUAGE

COMPETENCIES	CLASS I	CLASS II	CLASS III	CLASS IV	CLASS V
LISTENING	Listening with understanding simple, familiar & popular rhymes, poems & tales	Listen with understanding simple but unfamiliar poems, songs, rhymes & stories.	Listen with understanding narrations, descriptions, word-play & riddles.	Listen with understanding simple speeches in familiar situations.	Listen with understanding recitations, play & debates during a school function or competition.
	Understand conversation & dialogues in familiar situations.	Understand conversation & dialogues in familiar situations.	Understand conversation & dialogues in familiar situations.	Understand conversation & dialogues in unfamiliar situations.	Understand conversation, dialogues & discussion in unfamiliar situations.
	Understand oral requests & simple instructions in familiar situations.	Understand oral requests, instructions, commands & questions in familiar situations.	Understand oral instructions for playing games, carrying out simple activities	Understand series of oral instructions for performing an activity.	Understand instructions for performing a group activity.
SPEAKING	Repeat simple sentences correctly	Pronounce all sounds of the language.	Speak with correct pronunciation.	Speak without stoping unnaturally	Speak fluently & naturally.
	Answer simple questions requiring yes/no answer.	Answer simple questions requiring full answers.	Describe familiar things & objects.	Describe unfamiliar things & objects.	Describe situations & events.
	Ask simple questions.	Seek information about familiar things.	Ask more complex questions.	Take part in simple classroom discussion.	Take part in plays, debates make formal announcements

COMPETENCIES	CLASS I	CLASS II	CLASS III	CLASS IV	CLASS V
	Read large print & handwriting on blackboards, flash cards, etc.	Read large & small prints.	Read handwriting of other children.	Read handwriting letters.	Read print & handwriting freely.
	Read aloud simple known words (of generally not more than ten syllables.).	Read about rhymes, poems, songs & simple stories.	Read simple story books & other children's books.	Read children magazines.	Read print & handwriting freely.
WRITING	Copy consonants, vowels, mantras & conjuct letters.	Copy words & sentences.	Take distinctions of correct shape, sequence, spacing of letters & words.	Write neatly & legibly.	Write with correct format, spacing, etc.
	Write (from dictation) consonants, vowels, matras & conjuct letters.	Take simple dictation of known words.	Take dictation with unknown words.	Take dictation simple punctuation marks.	Take dictation with all puntuaction marks.
	Write simple familiar words & simple sentences.	Write simple guided descriptive sentences.	Write simple guided compositions.	Write guided compositions using paragraphs & punctuations.	Write short free composition including simple informal letters & dialogues.
COMPREHEN-SION OF IDEAS (through listening & speaking)	Recall simple information given in a short spoken text.	Recall sequence of events in a short spoken or written text.	Locate main ideas in a spoken or written text.	Recognise simple cause -&-effect relationship between ideas & events in a spoken or written text.	Make inferences from the information given in a spoken or written text.
	After listening be able to answer questions of 'what', 'who' & 'where'	After listening be able to answer questions of 'what' & 'how'.	After listening or reading a text be able to answer questions of 'why'.	After listening of reading a text, be able to answer questions using 'because', 'since'.	After listening to or reading a text be able to answer & question using 'if ...then' & 'if not then'.
SELF-LEARNING	Be able to use simple picture glossary where available .	Be able to use simple picture encyclopedia where available.	Be able to use children's illustrated dictionary where available .	Be able to use junior dictionary where available .	Be able to use junior encyclopedia where available.
LANGUAGE USE	Understand & use simple polite formulas.	Speak politely & be attentive while listening.	Take turn while speaking in group.	Learn about difference between formal & informal language.	Use appropriate language in formal & informal situations.
VOCABULARY CONTROL	**Be able to acquire reading comprehension vocabulary of approximate 1500 words.**	**Be able to acquire reading comprehension vocabulary of approximate 2000 words.**	**Be able to acquire reading comprehension vocabulary of approximate 3000 words.**	**Be able to acquire reading comprehension vocabulary of approximate 4000 words.**	**Be able to acquire reading comprehension vocabulary of approximate 5000 words..**

1.2.1 CONCEPT OF RHYME

A rhyme is a repetition of identical or closely similar sounds arranged at regular interval. Rhyme words leap easily from the page to the ear to the memory. The mnemonic adhesiveness is such that sometimes it seems impossible to dislodge from mind Rhyme is a rhythmical poem intended to amuse young children. These verses appeal to children because of their pleasing rhymes and sounds and their strong rhythms Many of the rhymes are known to some children, but a few or more to others. All children delight in rhyming words, rhythm, non-sense sounds, and simple stories. No matter if children do not understand their meaning they enjoy the singing song rhythm. We think of rhyme as children's literature. Our calling it a rhyme indicates that we think it is suitable for children, and indeed this rhyme appears in countless collections of such rhymes lavishly illustrated and marketed for a child audience. Its brevity, its bounce, and its bumptious fun mark it suitable for children. Further, we do not have a date of composition, something that is usually available when a work of literature comes to us from a named author. The rhyme appears to exist in a timeless zone; it actualizes a freedom that confirms our hope that once upon a time purity and innocence were ours. We want our children to signify the truth of an absolute beginning when nothing needed to be explained, analysed, scrutinised, or interpreted.

We all know that rhymes for children or adults, are not found beneath trees; nor do they emerge fully formed, pristine and transparent, from mysterious vaults presided over by powerful publishers. We know that someone at some place and at some time made up this rhyme, just as we know Lewis Carroll made up Alice's Adventures in Wonderland while living in Oxford in the 1860s or WilliamWords Worth made up The Prelude in stage between 1798 and 1805 and then tinkered with it until he died. Knowing this prompts us to speculate on or investigate the rhyme's origins.

We offer rhyme to children as something valuable when they are very young, and we rightly ask ourselves, why do we do this ? What does this rhyme have to offer children ? What effect will it have on them ? What meaning does it hold ? What meanings will be apparent to children ? What meaning will be accessible, even unconsciously, to them ? Such questions beg others· What is the meaning of meaning ? Is meaning important at all, and if

- so, then how do we arrive at the meaning of this or any text ? What do we want children to get from this rhyme and why ? (Roderic, Mc.G., 1996)

1.2.2 DIFFERENT TYPES OF RHYMES

There are various types of rhymes which are taught to children in schools. These different types of rhymes are Lullabies, Singing game rhyme, Non-sense rhyme, Rhyming riddle, Counting-out rhyme, Tongue twister, Verse stories, Cumulative rhyme, and Jumping rope rhyme. Different rhymes have different purposes. Some are sung to help children fall asleep, some are just for fun, and some are to identify a certain object from clues in the verse etc. Sometimes it is difficult to pronounce, remember, write, recite and understand the rhyme on the part of the elementary children. These are presented with example as follows :-

(1) Lullabies
(2) Singing game rhyme
(3) Non-sense rhyme
(4) Rhyming riddle
(5) Counting out rhyme
(6) Tongue twister
(7) Verse stories
(8) Cumulative rhyme
(9) Jumping rope rhyme

(1) Lullabies

Lullabies are simple, soothing melodies sung to children to help them fall asleep. "Rock-a-bye" is the best known lullaby in English language.

"Rock-a-bye, on the tree top,
When the wind blows the cradle will rock,
When the bough breaks the cradle will fall,
Down will come baby, cradle, and all."

(2) Singing game rhymes

Singing game rhymes accompany dance or certain games, for example, "Ring-a-ring O" is sung by a group of children who join hands and dance in circle.

"Ring-a-Ring O' roses;
A pocket full of posies,
A - tishoo ! A - tishoo !
We all fall down."

(3) Nonsense rhyme

Nonsense rhymes are created just for fun. This one has the humour and wit typical of such verse.

"If all the world were paper,
And all the sea were ink,
If all the trees were bread & cheese,
What should we have to drink."

(4) Rhyming Riddle

Rhyming riddles ask children to identify a certain object from clues in the verse. It is effective form of word play. To use riddle, children must interact verbally with others, and try to create riddles, they have to organise information and decide upon and significant details. Riddles can help children more from the literal to the interpretive level of understanding. Riddles provide both context clues and high-interest in material, which promote vocabulary learning.

"Runs all day and never walks;
Often murmurs, never talks;
It has a bed and never sleeps; It has a mouth and never eats."
The answer is river.

(5) Counting out rhyme

Counting-out rhymes are formulas that help children choose side for a game. The verse "One, two, three, four, five" is an example.

"One, two, three, four, five !

Once I caught a fish alive;

Six, seven, eight, nine, ten !

Then I let it go again."

Such rhymes may also help children learn the day of week, the months of the year, and how to count.

(6) Tongue twisters

Tongue twisters are difficult to say without making mistake. The fun of these rhymes comes from reciting them accurately as fast as possible. "Peter piper" is a famous tongue twister.

" Peter Piper picked a pack of pickled peppers;
A peck of pickled pepper Peter piper picked;
If Peter piper picked a peck of pickled peppers,
Where's the peck of pickled peppers Peter Piper pickled ?"

(7) Verse stories

Verse stories are short dramatic tables that have many interesting characters. Most of these rhymes are longer than other types of nursery rhyme." The Queen of Hearts" is a popular verse story.

" The Queen of Hearts,
She made some tarts,
All on a summer's day;
The knave of Hearts,
He stole those tarts,
And took them clear away,
The king of Hearts,

Called for the tarts,
And beat the knave full sore;
The knave of Hearts,
Brought back the tarts,
And vowed he'd steal no more."

(8) Cumulative rhymes

Cumulative rhymes, in each successive verse, repeat the information presented in the earlier verses. Thus each verse is longer than the previous one.

Here is the first verse of.

" The House that Jack Built.
This is the house that Jack built.

The second verse has two lines,
This is the malt
That lay in the house that Jack built.

The Third verse adds another line to the story.
This is the rat
That ate the malt,
That lay in the house that Jack built.

This cumulative rhymes then continues for many verses.

(9) Jumping rope rhyme

Jumping rope rhyme verses are part of an oral tradition that links communication and play. In addition, the vocal component is often combined with the physical, including rope skipping, ball bouncing and hand clapping. Such rhymes have great entertainment value and are remembered with pleasure well beyond childhood.

" Bubble gum, bubble gum, chew and blow.
Bubble gum, bubble gum, scrape your toe.
Bubble gum, bubble gum, tastes so sweet.
Get that bubble gum off your feet !"

1.2.3 SELECTING RHYMES FOR THE CHILDREN

Unless the rhyme selected is enjoyed by the teacher, it will not be likely to please the children. Her feeling of its fitness and beauty is to a large degree carried over to her listeners and will probably determine whether or not the child likes it. This point of the personal appreciation of the teacher as she sings to her children needs to be emphasized because there is a tendency to select rhyme upon the basis of their relation to the children's activities or their suitability for some special occasion rather than for the quality of the rhyme itself. Children's song should be short, simple in content, and of such rhythmic melody that they almost sing themselves. The words should be familiar ones, expressing familiar ideas. Rhymes built upon a refrain or having much repetition are easy to learn and pleasing to the children. The old folk songs and the best of our modern rhymes meet these requirements.

Children who have difficulty with the higher pitched songs or who will not sing them at all join happily in the singing when rhymes are adapted to their natural pitch level. This suggests that it is wise to fit the rhyme to the child, giving him a feeling of success and joy and letting him gain control of the higher tones gradually and unconsciously as he sings.

The number of available children's rhyme is great. The teacher will need to show discretion in selecting the songs for her particular group. She may wish to make her own collection of the songs and the rhythms she uses frequently. Many books contain only one or two rhymes so good that they will be used again and again.

1.2.4 THE CONTENT OF RHYME FOR CHILDREN

Young children want their rhymes to be simple, vivid, and to the past, much the same pattern that they demand of stories they read. Each rhyme should present on clear thought or image, or a succession of such thoughts. Children will accept rhymes they do not completely understand, such as the mysterious rhymes of Walter de la Mare; but they are not

as tolerant about rhyme that is vague and deliberately confusing They cannot "take" too many figures of speech, long descriptions or much philosophizing.

Children's preferences for rhyme are very similar to their preferences for prose. The young child enjoys rhyme of everyday occurrences. His interest in animals, both comical and real. Narrative rhymes, such as, Ciardi's "Mummy slept Late and Dady Fixed Breakfast" and limericks, including both modern and traditional were the favourite forms of rhymes for children. Rhymes that contained much figurative language or imagery were disliked Children's favorite rhymes at all grade levels contained humor or were about familiar experiences or animals. The change in the weather and the seasons continue to be a source of wonder to them. All children enjoy humorous rhyme, whether it is gay nonsense or an amusing story. Yet children today are well aware of the evils and inequities in modern society. Middle grade children are deeply concerned about what is happening in the world and are writing and reading rhyme of social commentary. More sophisticated, more "aware" than children ten years ago, today's child wants his rhyme to be straight forward and, above all, honest.

1.3.1 COMPUTER AS A LEARNING ENVIRONMENT

Computer as a medium has many attributes required for instruction, viz., storage in the form of Text, Music, Graphics, Animation. Subject matter can be created in various modes, such as, Text, Text Music, Text Graphics, Text Graphics Music, etc., and stored and retrieved suitably. There is a matrices of language levels, viz. Phonetics, Grammar and Vocabulary on one side and Listening, Speaking, Reading and Writing skills on the other side. There may be various objectives of language learning, such as, Vocabulary, Analytical Understanding, Comprehensive Understanding, Recitation ability, etc. It is highly desirable to explore the use of computer as a medium for language learning. Intuitive stage of cognitive growth i.e. 4-7 years, is the prime stage for language development.

The expanded use of computers in schools has led researchers, teachers, and administrators to look for the efficient ways to integrate the advanced technology in instruction Empirical research consistently indicates the importance of training students to

monitoring, control, and regulate their learning as they use computer (e.g , Bangert Drowns, 1993; Pallmbo, 1990).

Computer can be useful in a language experiences lesson. The teacher can type in student dictated material and modify it as the students direct when using the computer in the way, the children facing monitor directly, with the teacher sitting at an angle to the monitor. This arrangement gives the students who are composing the story an unobstructed view (Smith, 1985). The students may use one beginning and develop different endings, printing out the different versions for comparison. The teacher can give students individual printed copies to illustrate and/or expand (Grabe and Grabe, 1985).

Another way to use the computer that takes advantages of its graphics capabilities is to provide a sequence of pictures that tell a story and let the students dictate a title and a story to fit the pictures. The teacher can enter the dictated title and a story to fit the pictures. The teacher can read their stories from the computer screen. Then the teacher can print story and pictures for them (Grabe & Brabe, 1985).

Children can write stories on the computer most effectively, when several students work together. One child can decide what to write and can enter the text, while one or more "advisers" offer help with mechanics, spelling, grammar, or computer operation (Starshine and Fortson, 1984); or the group of children can collectively decide what to say, taking turns entering sentence as they are agreed upon.

Computer drill-and-practice program can provide repetition without the impatience sometimes manifested by the teachers. When the goal is development of accuracy, the computer can be used to present a few exercises accompanied by immediate feedback, particularly, for incorrect answers. After the children have attained accuracy, the teacher can have them practice using computer programs with large numbers of exercises, sometimes emphasing speed, which are accompanied by less extensive feedback. Back drill-and practice programs recirculate missed items for further practice, without the teacher having to plan or execute such repetition (Balajthy, 1984).

Game characteristics can add an interest to computer drills. With or without the game format, computers have the capability to provide graphics that increase the appeal of the programs (Balajthey, 1984).

Tutorial programs are really advanced from drill-and -practice programs in which the computer actually presents instruction, then follows it with practice activities. Depending upon the responses a student gives as the program progresses, he or she may be branched to a remedial sequence of instruction, taken back through the initial instruction, directed through the typical sequence for the instruction, or skipped ahead in the program to avoid unnecessary practice. In same programs, the student has no direct control over the sequence; in other, he or she may request review, remedial help, or additional practice as part of the program design.

Programs may be self-paced or computer paced. self-paced programs allows the student to move at his or her own rate through the material, thereby, providing more attention to individual differences.than computer paced programs, which progress through the material at a predetermined rate (Balajthy, 1984). Sometimes the programs are designed to allow the student to choose a pace for the entire program when study session starts.

1.3.2 THE ADVANTAGES OF COMPUTERS IN INSTRUCTION

Some educators believe that computer will substantially lower instruction costs and raise the quality of education at the same time. Properly programmed, computers can eliminate boredom and provide individualised instruction.

- Computer can exhibit superhuman patience in working with students. The learner can repeat a sequence many times over, without the machine becoming tired, irritated or frustrated.

- Computer can be programmed to provide for differences in learning ability. Both slow and fast learners can be taught effectively through computerised instruction. A computer can pace instruction at the rate determined by the individual student Slow

learners can request that a sequence be repeated or ask for remedial work Fast learner can skip ahead or ask for enrichment work.

- Computer provides teacher with a flexible means of instruction unlike the pages of a book or a motion picture film, computer can branch, skip around, repeat information, or expand points in greater depth. Students input responses and the computer will direct the learning process to move student through a body of knowledge. Both speed and depth are unique and suitable to the needs of the individual students.

- Computer responds immediately. Computer can provide instant answers and follow up on a students progress. Computers can test, drill, and provide immediately scores and evaluations.

- Computer instruction exposes students to a variety of media. A computer can be connected to many devices. It can control projects, video-tape recorders, audio recorders, measuring devices, and micro film machines. These elements enrich the learning process. The printed page, on the other hand, is limited to static pictures and lines of text.

- Computer can be programmed to engage students in an interactive dialogue. Most effective teachers use the dialogue technique to communicate with students. The motion picture film, lecture, and textbook are not by their nature dialogue- oriented. The length intensity of the dialogue can be controlled by the student when interacting with the computer.

1.3.3 COMPUTER IN PRIMARY CLASSES

The introduction of computer in Primary Classes for providing learning experiences to pupils is to :

- help in increasing their span of attention concentration ability.

- help them by providing tutorial exercises.

- help them to develop interest in studies
- help them by providing simulation programmes for presenting a model of some reality.
- help them by developing in them a sense of achievement.
- help them in preparing themselves for the future.
- provide a good visual stimulus for themselves for the future.
- provide a good visual stimulus for them or help in the visual developments.
- equip them with many skills like the observational, programization, classification and the inquiry skills.
- help them in improving their learning outcome
- help them in the development of ability to withstand frustration
- help them in the psychomotor developments including eye / hand co-ordination.
- help them by providing drill and practice or by reinforcing concepts already taught.
- develop self confidence in them.
- help in their social development.

Another reason for incorporating computers in the curriculum is that in western countries, "Earn and Learn" pattern is well established. It is gradually becoming popular in our country too. Often, better education is expensive and if children are equipped with computer operating skills then they will be in a position to earn while learning later on It will increase the job opportunities for students in future.

1.3.4 PRINCIPLES OF TEACHING : YOUNG CHILDREN AND COMPUTERS (CLEMENTS,D.H., 1985)

(1) There are situations in which computers should be used, and there are situations in which computers should not be used

(2) Priority should be given to computer applications that place the children in the role of active learners with some control over their educational environment.

(3) Both experiential and drill (and tutorial) programs are beneficial, however, children should receive as much practice as possible in the context of higher-level experiences.

(4) Children's preference should not be the only basis for curricular decisions.

(5) Child development should be used as a guideline.

(6) Students should experience a wide variety of computer applications.

(7) Computer activities should be integrated into the curriculum.

(8) Children can and should use computers meaningfully in ways that facilitate their intellectual, social, emotional, and creative growth.

(9) Every computer practice should be consonant with the overall principles of the educational program.

(10) Learning with computers should be a means to achieve educational goals, not an end.

(11) The teacher is the key to successful use of computers.

1.3.5 COMPUTER BASED RHYMES

Computer as a medium has many attributes required for instruction, viz , storage in the form of Text, Music, Graphics, Animation. Subject matter can be created on computers in various modes, such as, Text, Text Music, Graphics Text, Graphics Text Music etc., and stored and retrieved suitably. There is a matrices of language learning levels, viz., phonetics, grammar (syntax), and vocabulary on one side and listening, speaking,

reading, writing skills on the other side There may be various objectives of language learning, such as, development of vocabulary, analytical understanding, comprehensive understanding, recitation ability, LSRW ability, etc. It is highly desirable to explore the use of computer as a medium for language learning.

1.3.6 EMPHASIS ON COMPUTER EDUCATION BY RAMAMURTI COMMITTEE REPORT (1990)

Reviewing school education, Ramamurti Committee emphasises that·

(i) Computer education of course is important because computerisation has become part of technologies contributing to development in every sphere.

(ii) Computer learning should be made an integral part of the time table. Emergent and meaning steps for the production of computer software in regional language should be taken. The resource centres which are expected to train teachers and provide necessary support should be streamlined.

1.4.1 REVIEW OF RELATED LITERATURE

The conceptual framework for the present study has been presented previously in this chapter and this section presents the review of research efforts regarding computer in elementary education and their effect in different mode of presentation through computer. An attempt has been made to develop an overall understanding about the nature and findings of the researches conducted earlier, with a view to draw support to the conceptual framework and methodology of the present study. The studies reviewed and presented hereunder have been conducted, covering different aspects of language development elements through different modes of presentation on computer. It is classified in two sections. The first section is related to studies on computer and children learning process through computer specially in elementary schools and section two deals with the studies related to pupil learning process involving rhymes, rhythms, songs, music and different learning processes in general in elementary schools

Studies conducted on different modes

Locas,L.A.(1992) conducted a study entitled "Effectiveness of interface types on learning and satisfaction for Computer·Assisted Instruction" The objective was to investigate

whether the visual form of commands that subjects had to use in communicating with a computer affected their ease of learning or satisfaction in using computer Assisted Instruction. 90 students from a middle school in Bethlahem, Pennsylvania formed the sample. Commands were displayed on the computer screen in the three following forms · by a picture, by a word, or by a picture and word. The subject selected the commands by using a mouse device. There were two sets of tasks. Subjects were exposed to the different forms in each of the sets. Given that, subjects were tested on two of three forms and two sets of tasks, the subjects were randomly assigned to six treatment groups, fifteen subjects in each group.

Results for satisfaction indicated that there was no significant difference between groups or tasks when analysing the data in the Latin square design analysis. However, there was a significant difference between the words only, and the combination of pictures and words forms. Groups were more satisfied with the combination than they were with the words alone. These resulted to the conclusion that there were significant differences between the words only, and the combination of pictures and words forms when early adolescents performed tasks using CAI.

Rice,G.E.(1991) conducted a study entitled "Examining construct of reading comprehension using two presentation modes: Papers Vs. Computer", with objectives to examine the constructs of reading comprehension as they transpire under the two text presentation modes using a memory recall measure and the second was to determine reading comprehension using an on-line measure of a study skill; i.e. heighting. Two rhetorical types of expository prose were used in this study, "cause" and "collection". The casual type passage relates an antecedent condition to its consequent, and the collection type passage relates a series of attributes to an idea or event.

In using an on-line measure of study skill, there was a significant main effect found for mode of presentation (paper over computer).

Tasi,Y.M.(1992) conducted a study entitled "The effects of different systems of positive reinforcement on computer based learning", with an objective to investigate the effectiveness of three selected hierarchies of positive reinforcement stimuli (i e Text, Text with Sound, and Text with moving Picture as well as Sound effects) coupled with different

presentation schedules (i e. continuous, fixed ratio, and variable ratio) on computer-based learning of the arithmetic concepts of additions

The subjects who participated in this study were forty five second grade pupils During the experiment, subjects were randomly assigned to one of the nine groups in which each group ran a different computer program. Prior to the experiment, subjects were provided with an identical paper-pencil pre-test. At the conclusion of the experiment, subjects were again given a paper-pencil post-test. Difference among treatment group means were tested for statistical significance by two-way analysis of covariance The result revealed that there were no significant deference among the reinforcement conditions. A paired t-test was then used to determine if statistically significant difference between the pre-test and post-test existed. The results showed that subjects performed much better on the post-test than on the pre-test.

Gates,C.A.(1993) conducted a study entitled " The effect of perceptual modality on rhythmic achievement and modality performance of first grade children". The objective was to examine the effect of instruction using activities in the visual, auditory, and tactile/ kinesthetic modalities upon rhythmic learning and upon music modality performance. The influence of preference condition on rhythmic achievement was also studied.

Subjects were 54 first-grade children in three self contained classrooms in the elementary school. Intact groups were randomly assigned to one of the three treatments : tactile / kinesthetic auditory, auditory- auditory, and visual auditory. Treatment consisted of 15 lessons over six weeks with each group receiving rhythmic instruction using activities in the assigned modality. Rhythmic instruction emphasised quarter notes, paired eighth notes, quarter rests, and half notes.

The pre-test post-test control group design was used in the study. Music Modality Preference for children was administered before and after the treatment and Rhythm test (RT) was given as a post-test only. At the end of instruction the visual treatment group scored significantly higher on preference for the visual modality than other two treatment groups. The instructional groups scored significantly higher on the (RT) than the other two instruction groups.

Wilson,P.B. (1992) conducted a study entitled "The effect of the map and animated advance organiser on learning in complex computer-based information systems", The objective was to answer four questions comparing the effectiveness of three levels of graphic cueing (1) animation; (2) graphical map and (3) navigating in a complex hierarchy computer system.

The results revealed that the combination map plus animation condition (M+AN) proved to be powerful. The results for (M+AN) conditions showed educationally significant effects, sizes on all development measures except latency rate when compared to the animation condition (AN).

Ritchie,S.D. (1994) conducted a study entitled "Music, mood, learning : An investigation of the effects of musical accomplishment with computer presented text". The objective was to present subjects with three expository texts accompanied by music that was either congruent or incongruent with the presumed effect of the texts. Subjects also were presented a text without musical accompaniment. The musical accompaniment was expected to induce mood states congruent or incongruent with the effect of the texts which would, in turn, influence learning. Music was also expected to influence subjects' attitude towards instruction. A post-test only single factor multiple treatment design was used, to analyse data regarding subjects' free recalls of facts and the idea presented in the texts, self-rating of mood in response to experimental treatmental treatments, and rating of attitude towards the texts. Subjects' comments related to the instructional experience were also collected.

The findings revealed that subjects were not influenced by musical accompaniment. Post hoc tests revealed no evidence of mood congruency affects learning. Analysis of recall data revealed that musical accompaniment was neither beneficial nor detrimental to the recall of facts and ideas presented in the essays. Subjects' comments indicated strong reaction, both positive and negative, to musical accompaniment when reading the computer - presented text. Subjects' attitude towards the topic of instruction and the quality of the written text were significantly more positive when the text was accompanied by effectively congruent music. Based on the results of this investigation, the decision to include musical accompaniment with computer presented text should be based on criteria, other than learning, such as, the importance of music to a particular topic of instruction.

Hsu,J.J. (1994) conducted a study entitled "Computer assisted language learning (CALL). The effect of ELS (Elementary Language Student) students use of interactional modifications on listening comprehension". The objectives were to examine (1) If second language student request modifications of the input they hear while working on computer based listening exercise and, (2) if these interactional computerised modifications help second language students' listening comprehension and language acquisition. Data were collected from 15 elementary second language students by using a one group pre-test post-test research design.

The findings revealed that second language students use the tools made available by computer technology to make input comprehensible. This study also supported SLA researchers' hypothesis that modifications promote comprehensively input and language acquisition. Again this study found that the text reinforcement type modifications were effective for beginning level ELS students in listening.

Sun,D.J. (1993) conducted a study entitled "Teaching young children compositional concepts to enhance music learning in a computer learning environment". The objective was to serve as a preparation before formal musical training for young children. The sample for this study was 23 young children, age 3 to 6 from Montessori school randomly chosen. A Macintosh computer with 14 inch colour monitor was used for the study. Kid's Pre-music included 10 lessons featuring four activities within each lesson: Improvisation, composition, sight reading, and ear training. The Transfer Test contained 33 question administered at the end of the study.

The children were offered opportunities to explore the sounds and choose the matching icons in the order they preferred. This was the first stage in the process of composition. The activities in improvisation and composition exposed the children to visual and aural stimuli and reinforced their perception of sound and icons a stepping stone to the understanding of symbols.

Shapira,D. (1994) conducted a study entitled "Enhancing word recognition and recall in beginning reading through the use of computer based graphic representation" The objective was to investigate the effect of computer based graphics representation on the ability of

beginning readers to recognise and recall words. Four different computer-based programs were developed and designed by the researcher for this purpose. Two consisted of graphic representation of the words with pictures and animation, in colour, two consisted of orthographic representation alone, in black and white. For the study, six boys and six girls, selected randomly, participated in the study. They were 4 to 5 year old beginning readers, native English speakers, and from middle-class families

The children were given four on line lessons, in which they were taught 12 new words (three each time). At the end of the instruction and practice stages, they were tested on their ability to recognise and recall the target words taught and to read them aloud In addition, observations were conducted throughout the session with the children, and a semi-structured interview was conducted with each child upon completion of the last session.

The findings revealed that ; (1) in each category and overall, the pictorial representation led to significantly better results than did the non-pictorial representation (2) The participants recalled with greater accuracy words they were taught earlier that were presented to them with pictures and animation, in colour, rather than words presented orthographically alone, in black and white. (3) Differences were expressed both by more errors made as well as by partial recall of words in the non-pictorial programs; the participants recalled them by shape only could not recalled them aloud. (4) computer-based graphic representation of new words has a major effect on the ability of learning to recognise and recall words.

Chul-Hwan,L. (1994) conducted a study entitled "The effects of auditory cues in interactive multimedia and cognitive style or reading skills of third graders", with an objective to investigate the effectiveness of auditory cueing of interactive multimedia material and cognitive style across the dependent measures of reading comprehension achievement scores, incorrect tries, and time spent in completing lessons. The independent variables for this study were the use of auditory cueing and cognitive style. The reading comprehension score of Comprehensive Test of Basic Skills (CTBS) were used as a covariate. This study employed a randomised block design by including three FD/I block of subjects in the experiment. The sample of the study was students who were randomly assigned to auditory cueing (Aud-cue) group and non-auditory cueing (Non-cue) group, after assigning into three cognitive style groups. The Group Embedded Figure Test (GEFT)

was used to determine cognitive style, field dependent (FD) group, Field Independent (FI) group, and Field Neutral (FN) group A series of two way ANCOVA tests were used to test the mean differences of dependent measures

These were the major findings revealed from this study· (1) There were no significant differences between students in the two groups in reference to auditory cueing on dependent measures. (2) There were also no significant differences among congnitive style (FD/FI/FN) of students on dependent measures (3)The original differences on reading comprehension achievement between FI students and FD or FN students were reduced, after receiving the interaction multimedia CAI lessons. The result of additional analysis for the study indicated that the FI student spent significantly reduced time in completing the interactive multimedia lessons when they received the auditory cues.

Sook-HI,K.(1994) conducted a study entitled "The effect of computer-based, context-embedded approaches to second language vocabulary learning". The objective was to study the effectiveness of computer-based, context-embedded to lay approaches to second-language vocabulary learning in comparison with conventional instruction strategies. Four experimental treatments were prepared : Paper and pencil (P&P), computer-based word-for-word (CW), computer-based word-for-word plus Picture (CP), and computer-based context (CC) conditions. The P&P treatment represented a conventional method of vocabulary learning, i.e. paired-associate word learning based on a translation, definition-oriented approach. The CW treatment incorporated basically the same approach as the P&P but was implemented on a computer. The CP treatment utilised pictures of word meanings in addition to all the features present in the CW treatment. Finally, the CC treatment embodied a context-based approach, as distinguished from the "isolated" definition-based approach commonly shared by the other three treatments.

The experiment was carried out at a local elementary school in Soul, Korea. The entire experiment consisted of seven sessions. In the first session, each subject was given a computer-attitude questionnaire, an estimate of verbal ability, and computer training. The main experiment consisted of the next five sessions. In each session, subjects went through their given experimental treatment which was followed by an immediate post-test. A retention test was given three days after the sixth session.

The following findings were revealed from this study (1) The CC group tended to perform rather poorly for the first few sessions, but made a gradual improvement In the final session the CC groups performance was superior to the other three groups (2) In the retention test, the CC group showed significantly higher performance than any other group on all the major tasks. This study strongly suggested that the proposed context-embedded approach to second-language vocabulary learning was most effective in promoting knowledge transfer, listening comprehension, and long-term recall of vocabulary definitions.

Klt,W.A.Y. (1994) conducted a study entitled " The use of animation in computer-assisted instruction". The objective was to examine learning effects of, and preferences for, animations in computer assisted tutorials. A set of guidelines for developing animated learning materials was developed. In Experiment 1, three tutorials covering the same learning materials were developed; a guideline consistent animation tutorial plus static graphics, a guideline inconsistent animation tutorial plus static graphics, and a static graphics only tutorial. These tutorials taught analysis of covariance concepts which involve spatial data adjustments. Subjects in the guideline consistent condition took the same amount of time and learned the same amount of materials as students who learned from static graphics alone. Subjects in the guideline inconsistent condition, who used animations that did not follow the guidelines, took longer and learned less than subjects in the other two conditions. Subjects gave higher equivalent ratings on quality, satisfaction and enjoyment for all three tutorials.

The second experiment used a within subjects approach to examine user preference for guideline consistent and guideline inconsistent animations, and for static graphics. Eighteen short tutorials were prepared. For each tutorial, there was a guideline consistent and a guideline inconsistent version. Seven tutorials also had a static graphic version, subjects viewed all versions for each tutorial. Subjects were then asked to rank order and comment on the different versions. It was found that subjects preferred having access to both animated and static graphics. These two types of graphics appear to serve different functions in information presentation.

Two major findings were revealed from the two experiments (1) For concepts which involve simple spatial movements, as well designed animations provide no advantage over static graphics that convey equivalent amounts of information (2) Animation that are of poor

quality can hinder learning. It is recommended that developers follow the guidelines proposed in this paper when developing animated learning materials.

Mary,H.D. (1995) conducted a study titled "Effects of Presenting Verbal Information Through Text and Narration Within Computer-Based Instruction", with an objective to compare the effectiveness of text and narrated presentation of verbal information.

The following findings were revealed from the experiment; (1) learners were more likely to access definitions presented through narration than through text; (2) The use of narration may increase the likelihood that learners with poor reading ability will attend to question feedback.

Experiment two explored the use of text and narrated delivery of verbal message to support graphics information. Lesson content was presented through graphic messages accompanying verbal messages.

The findings revealed that; (1) Presentation mode affects the time required for learners to complete a lesson; (2) Presentations with narration and or paragraph text required significantly more time than the no-text and outline-text presentation; (3) reading ability and general intelligence were related with how well subjects performed on both immediate and delayed post-tests.

Locas,L.A. (1992), Rice,G.E. (1991), Tasi,Y.M. (1992), Gate,C.A. (1993), Wilson,P.B. (1992), Ritchie,S.D. (1994), Hsu,J.J. (1994), Sun,D.J. (1993), Shapira,D. (1994), Chul-Hwan,L.(1994), Sook-Hi,K. (1994), Kit,W.A.Y. (1994), Mary,H.D. (1995).

Findings:

(1) Groups were more satisfied with combination of words and picture than only words forms.

(2) There were no significance difference between reinforcement stimuli (i.e., Text with sound)

(3) Visual treatment group scored significantly higher on performance for visual modality than other two treatments (auditory, tactile).

(4) Instructional groups scored significantly higher on RT (Rhythm text) than the other two instructional auditory and tactile/Kinesthetic groups.

(5) Map plus animation condition proved as in all developmental measures as compared to the animation condition.

(6) Including musical accompaniment with computer presented text should be based on criteria.

(7) Second language students use the tools made available by the computer technology to make input comprehensible, and computerised modifications and language acquisition.

(8) Visual presentation affected by the subjects' and the combination of visual and aural feedback affected their compositional style.

(9) Overall pictorial presentation produced significantly better results than non pictorial presentation.

(10) Participants recalled words with greater accuracy in picture and animation presentation than through orthographically presentation alone

(11) Computer-based graphics representation of new words has a major effect on the ability of learning. It helps reader to recognise and recall words.

(12) Defferences on reading comprehension achievement between FI (Field Independent), FD (field Dependent), FN (Field Neutral) students were reduced after receiving interaction multimedia CAI lessons.

(13) The Computer-based context group's performance was found superior to Paper Pencil (PP), Computer-based word-for-word (CW), and Computer-based word-for-word plus picture (CP) groups.

(14) Context embedded approach to second-language vocabulary learning was found most effective in promoting knowledge transfer, listening comprehension, and long-term recall of vocabulary definitions.

(15) Concept which involves simple spatial movements, as well designed animations provides no advantage over static graphics that convey equivalent amounts of information.

(16) Animation that are of poor quality hinder learning

(17) Learners were more likely to access definitions presented through narration than through text.

(18) The use of narration may increase the likelihood that learners with poor reading ability will attend to question feedback.

Studies conducted on interactions with computers with reference to understanding

Bharagava,A. (1991) conducted a study entitled "A microcomputer ethnography of children's computer generated graphics". The objective of the study was to focus attention on the pattern and characteristics of children's art working using a graphics arts software programme. In order to obtain a learning understanding of children's art as well as their interactions with the computer, the language and processes used to describe and complete the computer depictions were also analysed.

The analysis of the art work indicated that once the children had developed the perceptual and manipulative skills or relating the actions of the mouse to the appearance of marks on the drawing window and had an understanding of the tools and functions available in the software program, they used them to create art work that was characterised of their age appropriate developmental levels. Regression to art stages when introduced to the new medium was soon replaced by recovery to previously established art stages. A period of manipulation and experimentation with the new medium was followed by repetition of procedures to attain mastery. Finally, the children were able to use the tools and functions available to produce art work that was meaningful to them.

The language used by the children was primarily child directed and child informing. Questions were asked to get clarifications and seek explanations, and expressions were used to indicate emotions. The transcribed language associated with computer depictions revealed the stage of each computer drawing.

Lowrence,C.N. conducted a study entitled "Preschool readiness for computer usage : A correlational study". The objective was to study the appropriateness of utilising microcomputers with young children. The student population consisted of 17 girls and 25 boys who were enrolled in programs of the Early childhood Research Centre at the state University of New York at Buffalo and who ranged in age from 39 (3 years 3 months) to 62 (5 years 2 months) months. Procedure included identifying the subjects, testing the subjects on age appropriate instruments, post-testing, and analysing data at the 0.05 level of significance.

Results revealed that, young children preferred traditional pre-schooling activities rather than interaction with micro-computer. This was especially true of the subjects who scored higher on the academic measure.

Young,L. (1993) conducted a study entitled "Young children acquisition of directionality in Logo computer programming environment". The objective was to provide some explanation of children's difficulties with turn commands in Logo. This study was conducted on first, second and kindergarten pupils. The results found from the study were; children's abilities to identify the turtle's left and right at different orientations were significantly improved during the two Logo treatment sessions. The second graders gave more correct left-right judgments than the first graders or kindergartners. However, this was not true for the performance between the first graders and kindergartners. Finally, the older children performed at the higher levels than did young children.

Carver,B.A. (1993) conducted a study entitled "Describe the context of early computer learning in urban elementary schools". The objectives were to study the following; (1) describe the context of early computer learning (social interaction, instructional preparedness, and school computer status) for children attending schools in a large urban school district; and (2) determine the context of computer learning is related to student characteristics (in and out of school use of computers, and perceived self-efficiency.

The following results were revealed from the study; (1) Despite the drawback of CAI, it appears to promote out of school use. (2) Perceived computer self-efficiency instruction was predicted by assessments of school resources. This study demonstrated that increased computer use by students in urban environments can be significantly influenced by promoting meaningful social interactions, providing effective computer instruction, and increasing student awareness of computer resources.

Bharagava,A. (1991), Lowrance,C.N. (1992), Young,L. (1993), Carver,B.A. (1993)

Findings :

(1) Understanding of the concept of the tools and functions available in the software programme is related to developmental levels and age of the students

(2) Young children preferred pre-schooling activities rather than interaction with micro-computer.

(3) Older students performed at the higher levels with computers than did young students.

(4) Increased computer use by the students in urban environments can be significantly influenced by promoting meaningful social interactions, increasing student awareness of computer resources

Studies conducted on spelling, vocabulary, writing and composition

Anne,E.C. & Keith,E.S. (1990) conducted a study entitled "Early spelling acquisition writing beats the computer". They found that having first grade children write words leads to better spelling performance than having the children type them on a computer The superiority of handwriting was maintained ever under conditions where the post-training spelling assessment was done on the computer.

Abbot,H.M.(1992) conducted a study entitled "Linking visual and linguistic composition · A study of cognition using computer micro-worlds". The objective was to investigate link between the mental process of visual composition and those of linguistic composition. The study had two components, each of which compares visual / verbal pairs. First was a comparison of visual and verbal features in picture book created by the students.This alphabet books created in the traditional "A B C" books for children. They were produced using standard desk publishing techniques, because desk-top publishing involves text and graphics, it has an environment in which an individual's skills with both sentences and pictures may be studied. Secondly there was a set of case studies of students' visual and linguistic compositions. It was found from the study that; computer is a tool for generalised composition and it has important role in education.

Bueno,K.A. (1991) conducted a study entitled "An ethnographic study of the introduction of a contextualised computer environment in an elementary school Spanish classroom". The objective was to obtain an understanding of the impact of new electronic packages on learners in the classroom setting. The study describes a contextualised computer environment that has been designed for use in upper elementary school Spanish classes (grade 4-6) In addition, descriptions and analysis of the student interactions with the software have been documented. The study focuses on suggesting how students might use the software to develop sentence creating abilities.

Hodson,C.J. (1991) conducted a study entitled "The effect of computerised spelling instruction on the elementary classroom" The objective was to investigate the impact of computerised spelling on the elementary classroom in these specific areas instruction time, student and teacher satisfaction, and student growth in spelling.

The study was conducted in a small elementary district in a suburban of Chicago in the Fall of 1990. A multiple case design was used and each of the classes in grade two through four involved in the study was also compared with another class at the same grade level in the district which did not use a computer for spelling instruction.

The findings in this study were, the students were motivated to study spelling and they did not want to use a workbook for spelling. Their gains in spelling growth outstand those of students in class which did not use the computer for spelling. Teachers found that they saved an average 35 minutes each week that could be devoted to other areas.

Pullen,M.C. (1993) conducted a study entitled "A comparison of writing performance using conventional & computer-based writing techniques". The objective was to compare the length and vocabulary, as well as the content of the written English Compositions of the third grade female students when they used the conventional pencil and paper method.

The subjects were in the intact population of 54 third grade students enrolled in three classrooms at a private girls' High School during the 1991-92 school year. All subjects had completed eight hours of keyboarding practice prior to the study.

A multi-variate analysis of variance (MANCOVA) was used to analyse the data. Significant difference favoring the computer generated compositions were indicated for the variables, total number of words, unique words, and T-units. However, no significant differences were found for the variables, words length, sentence length, readability, content quality. Research finding indicated that writing tools do affect writing fluency This provides support for the use of microcomputer word processors in elementary classrooms

Sinkin,D.M. (1993) conducted a study entitled "A comparison of chapter one student achievement with and without computer-assisted instruction". The objective of the study was to evaluate the impact of the JOSTENS Integrated Learning System (ILS) on the achievement of the chapter one students. The sample of the study were the students in grade two through six at the four pilot and comparison schools Statistical analysis was carried

out, by grade at each school and across schools, to determine the pre-test, the post-test mean and the difference mean for each development variable vocabulary, comprehension, computation and problem solving

This study found that children who were exposed to the JOSTENS ILS achieved significantly higher on tests of achievement than the children who did not receive any computer assisted instruction.

Jean,W.B. (1993) conducted a study entitled " The use of computer assisted instruction in teaching of handwriting skills". The objective of this study was to determine whether the use of computer assisted instruction (CAI) would enhance the teaching of handwriting skills. The sample of the study was Spanish speaking children between the age of 4 and 7 years. Subjects were randomly divided into three groups: Group 1 received traditional handwriting instruction, Group 2 participated in CAI, and Group 3 participated in CAI but also was given reinforcement. Pre-tests were administered to establish an initial base-line for each subject. Progress was measured weekly in order to determine the impact of the interventions. One-way analysis of variance (ANCOVA) was used to compare mean number of letters correctly written by each group each week.

The findings of the study were as follows: (1) A significant difference in mean number of letters correctly written existed among the three groups of subjects at week 5 and week 6. (2) CAI with reinforcement resulted in significantly greater improvement in handwriting skills than did traditional instruction.

Kostelnik,J.L. (1993) conducted a study entitled "How computer functions as an aspect of literacy development : A qualitative description of a second-grade classroom". The objective was to investigate how computer use functions as an aspect of literacy development within a second grade classroom. The sample of this study were 18 second grade students of elementary school in a suburban district in North Center Texas. These students and their teacher were selected for this study because their classroom had been identified by the school district as one in which computers were used daily.

Data collected for this study involved the use of grounded theory methodology and the techniques of participant observation, interview, and document analysis to develop theory about the relationship between computer use and overall literacy development.

The following findings were revealed from this study; (1) Computer was found to function as a language tool when it was used in connection with reading and writing activities. (2) Computer use in the classroom functioned as an element of the overall literacy development of the students, regardless of the overt curricular purpose for the computer use, as long as students interacted with text in some manner, either by reading or writing.

Moy,B.J. (1994) conducted a study entitled "The Effect of Process Writing Instruction with and without Computers on the reading comprehension of students of below average and higher ability ". The objectives were; (1) to examine the effect of two types of process of writing instruction, writing to write with computer and non-writing to write (text book instruction), on students' reading comprehension. (2) To examine the effect of each treatment by ability. (3) to examine the relationship between the subjects' writing reading comprehension.

The following results were revealed from the study; (1) Both treatments had a significantly positive effect on the reading comprehension; (2) the computer group scored better on reading comprehension measure than those without computer and growth was consistent from year to year; (3) process writing with computers was more effective for below average students; (4) below average subjects with computers scored better on the writing test; and (5) there was a positive correlation between the reading comprehension and writing of below average students with computers.

Watkin,M.P. (1994) conducted a study entitled "A Comparison of the Effectiveness of two Supplementary Chapter I Reading Programs : Computer- Based Reading and Language Arts and A Priori". The objective of the study was to examine the effectiveness of two supplementary Chapter I reading programs : Computer-Based Reading and Language Arts (CBRLA) and A Priori. The sample of the study were two schools which used the A Priori program in Chapter I and two used the CBRLA program. The study involved 191 low-achieving at risk students (117 in A Priori and 74 in CBRLA) in second and third grade in a large urban school district. They were 164 African-Americans, 14 Hispanics, 13 whites of which 144 were males and 135 were females.

The null hypothese used for this study were tested at the 0.05 level of significance using analysis of variance A significant difference in gain scores was detected between the

priori program and the CBRLA program of Chapter I with the CBRLA group making the greater gain in reading There was also an ethnicity significance effect favoring students in CBRLA group with African- Americans making the largest gains. No differences were detected between gender groups.

Ann,O.K. (1994) conducted a study entitled "Writing and Receiving with Pencil and with Computer : An Analysis of the Process and Products of Seven First-Grade Children". The objective of the study was to examine and compare children's approaches to writing and revision as they engaged in written composition with computer and with pencil. Using a case-study approach and videotaped observations, the writing process and product of seven first grade children were examined including the frequency, level and patterns of revision; the frequency of rereading during composition; and the quality of composition, level of spelling, use of writing conversations (spacing, capitalization, punctuations), and length of the final written products. Rate of transcription, during period of writing, and time on task were also analysed classroom observation and, student and teacher interviews provided a broader context for interpreting study findings.

The following findings were revealed from this study (1) increase in revision at the computer was observed at the surface level only and was largely artifact of difficulties with procedures associated with text entry and manipulation at the computer; (2) context revision remained rare across writing conditions; (3) text produced with computer and pencils were similar in quality, accuracy, and length; (4) Children invested more time at the computer to achieve comparable results; (5) increase in revision in the early stages of computer use are function of a learning period.

Case study findings revealed that (1) children responded differently to the computer, based on their preferences and abilities; (2) positive attitude toward the use of the computer; (3) Most students reported that computers made writing and revision easier.

Jane,P.B.D. (1995) conducted a study entitled "The Effects of Writing with Pencil and Paper Compared with Writing with a Computer and a Word Processing Program on First-Grade Students who have Difficulty Writing". The objective of the study was to investigate the effect of writing with a computer and a word processing program compared with writing with pencil and paper on the quality of written output produced by first grade students who

have assessed written expression difficulties. A simple-subject, alternating treatments design was implemented across six students between six and seven years of age. The students' first grade teachers served as data collectors. The mode of writing (i e ; using computer and a word processing program versus using a pencil and paper) was the independent variable. The number of words and t-unit produced per session were the primary dependent variables. A secondary dependent variable was the students' attitude toward writing. Data were collected for a period of forty days.

The following results were revealed from this study; (1) students used more words and more t-unit when they wrote using a computer and a word processing program than when they wrote using pencil and paper; (2) same students had a more positive attitude toward writing when they used the computer and a word processing program.

Anne,E.C. & Kelth,E.S. (1990), Abbot,H.M. (1992), Bueno,K.A. (1991), Hodson,C.J. (1991), Pullen, M.C. (1993), Sinkin,D.M. (1993), Jean,W.B. (1993), Kostelnik,J.L. (1993), Moy,B.J. (1994), Watkin,M.P.(1994), Anne,O.K. (1994), & Jane,P.B.D. (1995).

Findings :

(1) First grade students writing words leads to better spelling performance than type them on computer.

(2) Computer is a tool for generalised composition, and it has most important role in computer in education.

(3) The computer software helped to develop sentence creating ability among the students.

(4) Students were motivated to study spelling but did not want to use workbook for spelling.

(5) Significant gains in spelling growth was shown by computer users than that of who did not use computer for spelling.

(6) Students saved 35 minutes per week which could be utilised in other areas.

(7) Significant differences favoring the computer generated compositions were indicated for the variables, total number of words, and unique words.

(8) No significant differences were found for the variables, word length, sentence length, readability, and content quality

(9) Writing tool has an effect on writing fluency and supports the use of micro-computer word processor in elementary classrooms

(10) Students achieved significantly higher on vocabulary, composition, computation and problem solving than those who did not receive computer assisted instruction

(11) CAI with reinforcement resulted significantly in greater improvement in handwriting skills than traditional instruction.

(12) There were significantly different mean number of letters correctly written by the three groups of subjects of 5 & 6 week.

(13) Computer was found to function as a language tools when they were connected with reading and writing activities and an element of overall literacy development of subjects regardless of overt curricular purpose for the computer use, as long as students interacted with text in some manner, either by reading or writing.

(14) The computer group scored better on reading comprehension measure than without computer and growth was consistent from year to year.

(15) Process writing with computer was more effective for below average students.

(16) Below average subjects with computer scored better on the writing test

(17) There was a positive correlation between the reading comprehension and writing of below average students with computer.

(18) A significant difference in gain score was detected between the priori program and the CBRLA program with CBRLA group making the greater gain in reading.

(19) Increase in vision at the computer was observed at the surface level only and was largely an artifact of difficulties with procedure association, text entry and manipulation at the computer.

(20) Content revision remained rare across writing conditions.

(21) Text procedure with computer and pencils were similar in quality, accuracy, and length.

(22) Children invested more time at the computer to achieve comparable results.

(23) Increase in revision in the early stage of computer use are a function of learning period.

(24) Children responded differently to the computer, based on their performances and abilities.

(25) Most students reported that computers made writing and revision easier

(27) Students used more words and more t-unit when they were writing using a computer and a word processing program than when they were writing using pencil and paper

(28) Students had a more positive attitude toward writing when they were using the computer and a word processing program

Studies conducted on reactions and attitudes of the students towards the computer

Ritter,S.K. (1992) conducted a study entitled "Using a computer assisted instructional program to teach the concept of subtractions to first grade students". The objective was to identify whether all students would benefit more from the use of this experimental alternative program than from the traditional program. The sample of two groups of 14 first grade students were engaged in the use of two different computer software programs for five sessions in a computer lab at a public elementary school in a middle SES neighborhood. The result revealed that, the population identified as "at risk" would benefit the most from the exposure to the subtractions process as "change".

Pearce-Burrows,A.J.(1991) conducted a study entitled "The differential effect of using the computer in a process writing program on the writing quality and quantity of third and fourth grade pupils". The objectives of the study were; (1) to explore whether writing skills as measured by the Test Of Written Language (TOWL), Diagnostic Evaluation of Writing Skills (DEWS) and wholistic range finders, would improve more for the computerised process group. (2) To identify differences in writing attitude and practices between computer groups and paper and pencil groups. (3) will the benefit of the computers be greater for weak writers as compared to above average writers. Data gathered through the observation as well as responses to the both questionnaires and interview questions were utilised.

Following were the findings of the study; (1) were processing offers potential for the development of the writing skills (2) A tentative link between improved writing using the computer and more efficient thinking skills was also indicated.

Nan,W. (1994) conducted a study entitled "The Effects of Computer Usage on Elementary Students' Attitudes, Motivation and Achievement in Mathematics". The objective was to study the extent and ways in which the use of classroom computer technology, in grade one, four and six impacted students' attitude, motivation, attendance and achievement Four

control and experimental classes from the Madison School District in Rhonix, Arizona were studied and the research spanned the spring semester of 1994

The following findings were revealed from this study, (1) Six grade experimental students' achievement in mathematics, as measured by the Iowa Test of Basic Skills mathematics subselections computation concepts and problem solving, was significantly higher than that of the control group. (2) Student to student interactions that were on task in nature increased more for the experimental than the control group at all grade levels. (3) There were no significant findings related to attendance or attitude and motivation. (4) The changing in interactions of the students and teachers did not begin to appear until after the first six weeks of the study.

Ritter,S.K. (1992), Pearce-Burrows,A.J. (1991), Nan,W.(1994)

Findings:

(1) Students of first grade were benefitted more through CAI than traditional instruction.

(2) Computer processing offers potential for writing skills.

(3) Thinking skills help in improved writing through computer.

(4) Student to student interactions that were on task in nature increased more for experimental than the control group at all grade levels.

(5) There were no significant findings related to attendance, attitude, and motivation.

Comparative studies conducted on achievement

Gordon,M.B. (1991) conducted a study entitled "A quantitative analysis of the relationship between computer graphics and the mathematics achievement and problem solving". The objective was to analyse, in a quantitative manner employing meta analysis techniques, the result of research using computer graphics to determine whether this feature of computer programs improves mathematics achievement and problem solving as measured by standardised and research development tools setting. Variables that contribute significantly to increase mathematics achievement were locally produced software and students working collaboratively instead of individually Students of young age groups and those in urban communities benefitted most from graphic software used to support mathematics achievement Students of low socioeconomic status and those of multi-ethnic

status benefitted significantly from graphics software used to support problem solving performance

Shilling,W.A. (1991) conducted a study entitled "Kindergarten learns constructing knowledge about literacy using conventional materials used computers" The objective was to study the written language developmental process with the sample of 81 kindergartners over an eight months period as they used conventional written materials and or computers with and without available synthesized speech feedback as a tool. Pupils were observed in their classroom twice weekly. Instruments to measure syntactic, orthographic and graphophonic elements of oral and written language were used for assessment in January. and June. A multiplicity of qualitative and quantitative techniques were utilised to analyse the data.

Results indicated that; (1) Although groups differed at initial assessment, they did not differ at final assessment in their level of syntactic, semantic, orthographic and graphophonic developments. Oral and written language of the pupils in all groups developed over time (3) Children used variety of strategies to explore written language and teachers utilised many strategies to encourage the language and print exploration. (4) Pupils' computer writing fell into six categories. They were (a) Written language play (Mook writing or letters and number keyed in randomly); (b) written language play (copied text or keyed in names spelled by other children); (c) copied text or keyed in names spelled by other children; (d) a combination of written language play invented spellings; (e) a combination of written language play copied text, and invented spelling; and (f) copied text, invented, transitional, and conventional spelling. (5) A positive correlation between writing samples and off the computer existed (6) The assessment tools used in this study could be used to maintain an ongoing record of pupil progress overtime in a public school kindergarten setting.

Schmidt,S.C. (1992) conducted a study entitled "Technology for the 21st century : The effects of integrated distributive computer network system on student achievement". The objective was to study the effects of an integrated distributive computer network system with Wasatch ILS courseware on reading, mathematics, and language achievement of 1,224 students from second through six grades Two elementary schools implementing the advanced technology with three PCs and a printer installed in every classroom were compared

with two comparative schools with similar demographics low socioeconomic status and high limited English- speaking students with no computer instruction in regular classrooms Changes in scores were statistically analysed by a two-tailed independent t-test for changed score.

Significant difference in the achievement gains were indicated in total reading, total math, and total language scores of low-achieving students in the treatment group Significant gains in maths were found at grade two and six and in language from grades three and six. Significantly greater changes in reading, maths, and language achievement were found for low achieving students who used the computer network system than for low-achieving students who received no computer instruction in school. No significant differences were found between low achieving students who used computers in the classrooms and low-achieving students who received instruction in a computer lab.

Dehn,M.J. (1992) conducted a study entitled " The effects of improved strategy training and computer mediated text on comprehension monitoring and reading comprehension. The objectives were; to study whether informed training and computer mediated text improved reading comprehension levels and to study whether computer mediated text is effective when it is predicted by informed strategy training. The sample of this study was 90 fifth through seven graders in an upper midwestern school. After experimental group received informed strategy training via computer assisted instruction, experimental and control read computer mediated text with or without computer assistance options. Mediated text with options allowed subjects to choose from five types of computer assistance intended to increase their comprehension of the passages.

The study found that subjects who received informed strategy training had significantly higher level of metacognitive skills than significantly higher levels of computer option use.

Roy,J.W. (1993) conducted a study entitled "An investigation of the efficiency of computer-assisted mathematics, reading, and language arts instruction". The objective was to determine whether achievement gains in language arts, mathematics, and reading attributed to Investigated Learning Systems (ILSs) in four Texas public school distributing during the 1990--1991 school year could be repeated in the 1991-1992 school year

Subjects for this study were third and fourth grade students in the Amarillo Independent school Treatment group students receiving supplemental computer-assisted instruction were matched with control group students receiving only traditional instruction

The following results were revealed; (1) significant differences in achievement between the ILS group and control groups in the nine out of eighteen comparisons (2) the results were inclusive for males and females at any grade level. (3) The conclusion of this study was that the achievement gain attributed to supplemental computer assisted instruction in 1990-1991 were generally maintained in the 1991-92 school year.

Cavanaugh,A.L. (1992) conducted a study entitled "Computer self efficacy, and primary children". The objectives were to determine computer competence training yielding significant increase in computer self-efficacy and to examine the extent and manner in which variation in computer competency could be explained by the variables; gender, grade, computer self efficacy, maths and language achievement.

Two hundred and thirty one first through third grade students participated The two schools were randomly assigned to serve as the treatment group (n=115) or the control group (n=116). The PC SERC was administered as a pretest. The treatment group then participated in the treatment, computer competency training. The PC SERS was administered as a post test and the children in the treatment group completed the PCCT. To increase the same size for regression, the control group participated in the treatment and post PC SERS and the control group participated in the treatment and post-PCSERS and the PCCT were administered Stanford Achievement Test math and language score was collected.

Analysis revealed that at the first grade-level maths ($p<0.05$) and language achievement ($p<0.01$) significantly explained variation within computer competence, while at the second grade level, only maths achievement ($p<0.01$) was significant.

Claton,I.L.(1992) conducted a study entitled "The relationship between computer-assisted instructions in reading and mathematics achievement and selected student variables" The objectives were to determine the effectiveness of computer assisted instruction (CAI) on reading and mathematics achievement, attitude toward reading and mathematics achievement and attitude for low socio-economic status. The sample of the study involved

students in grades 2 to 5 in five elementary schools All students in the study were located in large urban, suburban / rural school district in north-west south Carolina Students in the experimental school received CAI in reading mathematics for a period of one school year Students in the control schools received traditional reading and mathematics instruction during the school year. Findings indicated that the CAI students in grade 2,4,and 5 made significant gains in mathematics achievement among other findings.

Ouyang,R.(1993) conducted a study entitled "A meta-analysis : Effectiveness of computer assisted instruction at the level of elementary education (K.6)". The objective was to provide update information on computer-assisted instruction (CAI) in elementary education. The results revealed that; the elementary school raised their achievement scores when CAI was used. Among the subjects taught in the elementary schools, higher effect sizes were produced for the instruction of mathematics, problem solving, spelling, vocabulary, keyboard skills and, a significant difference existed between the instruction of spelling and reading. No significant difference was found among the grade level (K.6) and between the primary grade (K.3) and intermediate grade (K.4), however, the effect sizes are comparatively higher for the six grade than the third grade, and higher for the intermediate grades than the primary grades. Higher effects sizes for the most recent years may mean that developed computer technology could have an impact on increasing children's academic achievement. The study also indicated that the children in the intermediate grade benefited more from CAI than those in the primary grades and the newly developed computer technology could have an effect on increasing children's academic achievement.

Kim,S.Y. (1993) conducted a study entitled "The relative effectiveness of hands-on and computer-simulated manipulative in teaching seriation, classification, geometric, and arithmetic concepts to kindergarten children". The objective was to determine the relative effectiveness of computer-simulated "on-screen" manipulative and regular "hand-on" manipulative for young children. Thirty five children in two kindergarten classes from the same elementary school were assigned to on-screen and hand-on experimental conditions. Although assignment was non-random, the two groups had similar pre-test scores. Each group participated in three-2-week units The first unit covered geometry, the second unit covered classification; and the third unit covered seriation, counting, and addition The

length of instruction for each unit for each child was approximately one hour and 40 minutes. Students in each experimental group worked in pairs and were instructed by trained research assistant. The hand-on group (n=17) used geo boards, attribute blocks and cuisenair rods, whereas the on-screen group (n=18) used the software program, Hand-on math. Data were analysed by using analysis of co-variance.

The following results were revealed from this study; (1) Both groups made substantial statistically significant gains from pre to post administration of tests of geometry, logic, and multiple classification, and addition and equation. (2) Only the on-screen group made a significant gain on the seriation test (3) There was no significant difference between the mean score of the two groups on any of the post-tests.

Analysis of qualitative data revealed that on-screen manipulative provided children with a more interesting learning environment. Children in the hands-on group, but not in the on-screen group, sometimes played disruptive, non instructional games with manipulative. Also the teacher who used on screen manipulative did not have to worry about losing manipulative pieces or putting them away after the lesson.

Avent,J.H. (1993) conducted a study entitled "A study of language learning achievement difference between students using the traditional language laboratory and students using computer assisted language learning courseware". The objectives were to develop computer assisted language learning software; to develop empirical evidence concerning the value of this course specifically, and computer assisted language instruction in general. This was done by using this courseware, administering student testing, and analysing test results using quantitative methods.

The following findings were revealed from this study; that at every ability level the mean score of the computer group was higher than that of the language lab group. Second was; in every instance the mean score of the computer group was higher than that of the language group. Third was; the mean scores were significantly higher for computer taught items than for non-computer taught items.

Gingerlee,I.Y. (1994) conducted a study entitled "LOGO Mastery: Cognitive Styles and Problem-solving Strategies by Kindergarten and third graders" The objective was to determine as many different paths as possible to the destination within a two-minute time

period. The sample of the study were fifty-one third grade students and fifty one kindergarten students enrolled in an elementary school They were placed in either a field independent group or a field dependent group using a test of stylistic preference

The following findings were revealed from this study; (1) Kindergarten students performed as well as third grade students. (2) All students of third grade performed equally well regardless of the order of training. (3) An interaction effect for order of training when students were grouped by developmental level and stylistic performance. (4) Field independent kindergartners who were trained in the analytical problem solving strategy first did significantly better than field dependent third grader (5) Developmental level, stylistic performance, and the order of training had practically no significant effects on a students performance. (6) Provide support for the view point that age-appropriate LOGO training schemes coupled with problem solving strategies prepare young children for relatively complex problem solving within a LOGO micro-world.

Sheau-Yuh,L. (1994) conducted a study entitled "Investigation of the effect of teacher-developed computer-based music instruction on elementary education majors". The objectives were; (1) to investigate the effectiveness of computer-based musical instruction (CBMI) materials developed by a teacher researcher as compared to published CBMI materials; (2) to determine the extent to which a four-week treatment period of computer-assisted hyper media instruction would affect the achievement of elementary education students in musical instruction aural identifications.

The research design for the study consisted of a sample population of 45 students in a quasi-experimental post-test model with four treatmental conditions.

The following findings were revealed from the study; (1) Significant differences in performances and attitudes were identified between groups, hyper media groups and the control group. (2) Hyper-media instruction was evaluated favorably because it facilitates the simultaneous presentation of multiple modes, with each sensory mode reinforcing rather than hindering each other. (3) Students were more comfortable operating at a higher level of cognitive activities such as analysis or synthesis with the aid of such a controlled temporal-spartio design. (4) Students' attention was also drawn to details that have never been accessible to music novice.

Madson,J.C. (1992) conducted a study entitled "An Investigation of the Impact of Microcomputers on Mathematics Achievement in the Elementary Grades" The objective was to know the impact of microcomputers on mathematics achievement in the elementary grades, as reflected in the standard achievement tests. The sample of this study were 38 schools in eight school districts from Northeastern state from 1987 to 1991.

The following findings were revealed from this study; (1) systematic use of micro-computers was usually restructured to remedial students, (2) students using micro-computers for remedial maths had a significantly lower mean NCE (Normal Curve Equivalent) score than the non-users in the third grade, but significantly higher scores than non-users beginning in the fourth grade and grades three through six as a whole; (3) on entering remediation with microcomputers, students with low pre-test score showed larger percentage of gains and large extent of gains than those entering with higher pretest scores.

Gardon,M.B.(1991), Shilling,W.A. (1991), Schmidt,S.C. (1992), Dehn,M.J. (1992), Roy,J.W. (1993), Cavanought,A.L. (1992),Claton,I.L. (1992), Ouyang,R. (1993), Kim,S.Y. (1993), Avent,J.H. (1993), Gingerlee,I.Y. (1994), Madson,J.C. (1992), Sheau-Yuh,L. (1994)

Findings :

(1) Graphics software helps the students for better achievement in mathematics for young age urban communities and low socio-economic status students.

(2) There is no significant difference between initial and final assessment level of syntactic, semantic, orthographic and graphophonic development.

(3) There is Significant difference in the achievement gains on total reading, total mathematics, and total language score of low-achieving students in the treatment groups.

(4) Significant gains in maths were found at grade two to six and in language from grade three to six.

(5) Significant greater changes in reading, Maths, and language achievement were found for low achieving students who used the computer network system than low-achieving students who received no computer instruction in school

(6) Those who received informed strategy training had significantly higher level of meta-cognitive skills than computer instruction.

(7) Achievement gains were attributed to supplemental computer assisted instruction

(8) First grade level maths and language achievement significantly explained variation within computer competence, while at the second grade level, only math achievement was significant.

(9) CAI students in grade 2, 4, and 5 made significant gains in mathematics achievement.

(10) Children in the intermediate grade benefitted more through CAI than primary graders and newly developed computer technology has an effect on increasing children's academic achievement.

(11) "On screen" and "Hand-on" groups made substantial gains on geometry, logic, and multiple classification.

(12) Only the On screen group made a significant gain on the seriation test.

(13) At every ability level, computer group was higher than that of language lab, group

(14) All students at third grade performed equally well regardless of the order training

(15) Field independent kindergartens who were trained in the problem solving strategy first, did significantly better than field dependent third graders.

(16) Developmental level, stylistic performance, and the order of training had practically no significant effects on student performance.

(17) Systematic use of micro-computer was usually restructured to remedial students.

(18) Student using micro-computer for remedial maths had a significantly lower level than third graders but significantly higher than non-users of computer in fourth grade.

(19) Significant difference in performance and attitude were identified between hyper- media groups and the control group

(20) Hyper-media instruction was evaluated favorable because it facilitates the simultaneous presentation of multiple mode, with each sensory mode reinforcing rather than hindering each other

Studies conducted on computer and their effect on language and social interaction on pupils

Lin,H.I. (1991) conducted a study entitled "Language use and social interactions of young children in the Logo classroom : A qualitative study of children with different computing abilities". The objective was to study first grade children's language use and social interactions when they interacted with Logo. Children's computing abilities were presented from three distinctive yet interrelated perspectives interpersonal, socio-interactional, and task difficulty perspective.

The analysis, showed that regardless of the varying degrees of computing abilities, children's Logo experiences were on-task and social in nature Certain aspects of children's language use reflected their computing abilities, but the variation did not affect their overall patterns of language use. Children manifested the co-operative nature of Logo computing in their display of helping behaviours, which did not result from the computing abilities alone but were reflections of computing abilities, personal agendas, and the particular peer context that they were in.

Brewster,E.S. (1993) conducted a study entitled "Language behaviour and social strategies of English as second language and English as primary language of preschool children during computer-assisted instruction experiences". The objectives were to study and to describe the language behaviours and social strategies of English as a Second Language (ESL) and English as Primary Language (EPL) pre-kindergarten pupils during co-operative computer assisted instruction (CAI) experiences. The sample of the study was thirty-three pre-kindergarten pupils aged four to five years. The source of data for this descriptive study were a parent computer survey, videotapes, a subject interview derived from the young children's computer inventory, and written records

Parents' survey were used to determine pupils prior computer experiences outside school Pupils' interviews described attitudes toward computer use, and the tests and developmental checklist characterised each subject's abilities.

Subject interactions were tabulated according to each category and software used The findings revealed from this study were; (1) EPL students used teaching / instructing language more and ESL students used turn taking language more than other language forms (2) Software had an influence on subject language behaviours (3) The dominant social

strategy used most by both subject groups was cooperative behaviour (4) Other language and social behaviours were used similarly by all subjects. (5) The greatest difference among ESL and EPL subjects' computer use was time spent in the center (6) EPL subjects participated in two times more interactions in the computer centre than ESL subjects

Wallance,B.R. (1994) conducted a study entitled "Exposure to electronic entertainment media and student outcomes in two demographically diverse elementary schools" The objectives were to determine (1) to what extent does exposure to EEM correlated with formal academic performance; (2) to what extent does exposure to EEM correlate with discretionary activity; (3) to what extent does exposure to EEM correlate with recreational and social behaviour. The sample of the study consisted of 343 third and fourth grade children in demographically diverse public school districts located in South Western Michigan The following findings were revealed; there appears to be (1) little relationship between amount of EEM exposure and formal academic performance; (2) little relationship between amount of EEM exposure and discretionary academic activity; (3) a fair relationship between amount of EEM exposure and social behaviour.

Lin,H.I. (1991), Brewster,E.S. (1993), Wallance,B.R. (1994)

Findings :

(1) Children's language use reflected their computing abilities, but the variation did not affect their overall patterns of language use, and children manifested the co-operative nature of LOGO computing in their display of helping behaviour, which did not result from the computing abilities, personal agendas, and the particular peer content

(2) Computer software had an influence on subjects' language behaviour and English Primary Language (EPL) subjects participated in two time more interactions in computer center than English Second Language (ESL) subject.

(3) The little relationship between amount of EEM (Electronic Entertainment Media) exposure and formed academic performance discretionary academic activity and a fair relationship between amount of EEM exposure and social behaviour.

Miscellanouse studies on computer

Schez,K.F.(1991) conducted a study entitled "Pre-school discourse skill improvement with computer assisted instruction". The objective was to determine whether commercially available software, modified with enhanced dialogue from instructors, could improve discourse skills in Head Start students over improvements obtained without enhanced instructor dialogue, and over improvements of ordinary classroom instructor. Additional information about modifying software or designing new software to improve discourse skills was investigated. A sample of 93 students in five Head Start classes of 4-year-old was tested on the Preschool Language Assessment Instruction (PLAI) and the Peabody Picture Vocabulary Test-Revised (PPVTR). Students within each of the five classes were matched on score from the PLAI and the PPVT-R and then randomly assigned to one of three conditions (a) software with enhancement, (b) software alone , or (c) control condition. Five student speech-language worked with the students assigned to the computer aided conditions The third group of the students received normal instruction from the Head start staff. Following a treatment period of 3 months, a repeated measure's analysis of variance (ANCOVA) was used to analyse pre-test / post-test.

The findings of the study were that no significant group differences were found for treatment and significant differences were found for time. Qualitative analysis shows how the software could be modified or new software designed to improve discourse skills among children.

Krout,H.L. (1992) conducted a study entitled "Interactive Video : A comparison of three methods of presenting supporting video for computer-aided learning". The objective was to study on the effectiveness of specific method for presenting interactive video in the elementary school classroom. The research was conducted over a period of two weeks using 224 kindergartners, fifth, and sixth grade students.

The result of ANCOVA and MRC data analysis showed that student achievement was not affected by the method of presenting to support computer-aided learning (level III interactive video). No interaction among covariate and the mode of the presentation was found.

Results from this study showed that student achievement does not depend on the method used to present video in level III interactive video Schools consisting the use of level III systems should be based on presentation, decision on equipment availability and cost

Sartoria,V.J. (1993) conducted a study entitled " Effects of computer-based learning on the language development of pre-schools in special education classrooms". The objective was to investigate effects of computer-based learning on the language development. The sample of the study was forty-six 3, 4, and 5 year old in pre-school special education classes Classrooms were randomly assigned to treatment (computer use) or control (no computer use) conditions. Treatment group subjects (n=26) received three, twenty-minute sessions of computer based language instruction weekly for sixteen weeks. Control group subjects (n=20) received no computer-based language instruction.

All subjects were pre and post-tested using a standardised test of global language development. Findings from an analysis of covariance (ANCOVA) with the pre-test as the covariate, showed a significant treatment effect (p=0.032).

The findings revealed staff development needs, microcomputer implementation issues, and software appropriateness.

Leroy,N.D. (1993) conducted a study entitled "Development of computer-based experience in mathematics education for pre-school children". The objective was to describe the development and formative evaluation of a computer program designed to enhance, broaden and amplify the informal counting skills of pre-school children. The program set in graphics based with sound enhancement written for an Apple Macintosh II platform. The sample of the study were six pre-school children who were 4 to 6 years old and enrolled in private instructional facilities in Manhattan. The subject of the program used the interactive capabilities of the computer to enhance counting ability It provides an enriched context in which a child can develop her perception and memory for relationships between the numerisities; and the reciprocal relationship involved in incrementing and decrementing the value of a set An important feature is the use of tiles (unadorned squares) as an intermediate level of abstraction as an aid to concept development

Michael,S.S. (1994) conducted a study entitled " Measuring the effectiveness and acceptability of the folding-in technique as a classroom intervention between computer-based self-managed and teacher-managed conditions" The objective was to study the effectiveness and acceptability of the folding-in technique which was evaluated with elementary aged regular education students. This technique, operationalised by Coulter and Coulter (1989) specially presents ratio's of known and unknown material for student learning based on the research by Gickling and Armstrong (1978). The sample of the study were 60 students enrolled in first and second grade classes. Students were selected based on their scores obtained from their performance on an arithmetic fact test. Qualifying students were randomly assigned to one of the three conditions: computer-based self-managed, teacher managed or control.

The following findings were revealed from this study; (1) The folding-in technique did not produce significant difference in student performance over time when compared to the control group of the student performance over time when compared to the control group of students. (2) This intervention was effective in producing short term gain and retention of newly occurred information for some students.(3) In term of implementation time, the computer based self-managed condition required significantly less teacher involvement than did the teacher managed condition (4) The results of the acceptability rating found that both intervention conditions were highly acceptable to the classroom teachers though the number of respondents was low. (5) The students in all conditions also rated their interventions as acceptable, though the use of the Children's Intervention Rating Profile (CIRP) with this age level is questionable.

Claytor,G.B. (1994) conducted a study entitled "A Descriptive Study of a Teacher and Six Pre-Scholars Interacting with Computers: Teacher Mediated Activities, Teacher-Child Interaction and the Teacher's Perspective". The objective was to examine how one teacher introduced six pre-scholars to LOGO, a computer programming language designed to expose young children to the world of computer graphics Specifically, it contributes information regarding : (1) the teacher mediated activities proposed, planned, and implemented by the teacher; (2) the Language functions used by the teacher and the children during computer sessions; and (3) the teacher's perspective on this experience and how it changed over time

The data collected consisted of videotaped recordings, teacher-child interactions, observational notes, audio-taped teacher-researcher interviews, the teacher's lesson plans, the teacher's journal entries, and samples of the children's computer graphics.

This computer context supported the teacher's and the children's use of certain kind of language. There were questions for multiple purpose : "Known-answer" questions, "unknown- answer" questions, conformation-seeking questions, and curiosity questions

The study revealed that there were still many unanswered questions related not only to the things children do, but also to the roles teachers and children assume in computer contexts.

Cody,M.S. (1995) conducted a study entitled "The Role of Computer Assisted Instruction and other Techniques to Modify Instruction in Inclusive First-Grade Classroom: "Yes're Doing Work, But the Work's Fun". The objective was to investigate the perceptions of teachers, parents, students, special educators, and administrators about the use of computer-assisted instruction in seven first-grade classrooms that included children who received special education services.

The major findings were; (1) The use of CAI varied from class to class and that same classrooms were didactic while others were constructivist or electic; (2) Electic and constructivist teachers were more flexible about computer time and student's choice of software than didactic teachers; (3) time and limited equipment were other factors impacting the use of computers.

Charles,C. (1992) conducted a study entitled "Young Children's Skill in using a Mouse to Control a Graphical Computer Interface". The objectives were to clarify how readily children can manipulate the tools of the interface-control pointers, make selections, relocate icons and; secondly, to discover how far children can interpret the syntax and semantic of the symbolic material making up this environment; interpreting the meaning of icons, interrelating them. The sample of the study were (1) Six pre-school (children of average age 4 from nursery school) (ii) 36 primary pupils representing the first 3 years of schooling age range between 5:3 to 7:4 (iii) 6 adult novices · class teacher (iv) 12 experts

The following results were revealed from this study, (1) despite real age difference, the general level of fluency is very impressive, after any five short sessions, second and

third year primary school pupils are performing to the same standard as their equally novice teacher; (2) No significant gender correlated differences were found on any of these performance tasks despite an informal expectation among the teachers that girls might find controlling the mouse more difficult.

Studies dealing with developing language through musical program and its effects on the reading achievement of the children

Dominguez,D.S. (1992) conducted a study entitled "Developing Language Through a Musical Program and its Effect on the Reading Achievement of Spanish Speaking Migrant Children". The objective was to investigate the effect of a language development program that uses music as a medium of instruction on the reading achievement of Spanish speaking migrant children. The sample of the study were fifty-one pre-school aged subjects from a titled Summer Migrant Education program. The musical program was developed by taking all the different words and language patterns found in the pre-primary and arranging them into songs and set to music of familiar children's songs. The program was run for 6 weeks and the children participated twice daily. At the end of the instructional period, the subjects were administered the Houghtton Mifflin Reading Test. which is designed to measure the level of reading mastery. The data were analysed through the use of a t-test for independent means.

The following findings were revealed from this study; (1) t-test did not support a difference between the means of the post-test scores of the group receiving traditional drill-type instruction and the group receiving instruction through the medium of music; (2) the children did not suffer academically by participating in the programmes.

Dominguez,D.S.(1992)

(1) No significant difference was found between the means of the post-test score of the group receiving traditional drill type instruction and instruction through the medium of music

(2) The children did not suffer academically by participating in the programs.

Studies on writing ability

Clanton,B.R. (1994) conducted a study entitled "Writing Re-telling of Narratives as an Instructional Strategy in Traditional and Writing Process Second Grade Classrooms" The objective was to determine whether practice in written retelling that focused on the structural frame work of narratives, would enhance second graders' writing development. The sample of this study were 118 children from four writing process and four traditional classrooms The classes were randomly assigned to treatment and control groups. A written retelling instructional strategy was conducted with the writing process and traditional groups over 12-week period.

The following findings were revealed from this study; (1) the factors which influenced the quality of their written re-telling were (a) the interest of the child (b) the amount of time given to complete the written re-telling, and (c) the opportunity given for social interaction.

Lesley,C.M. (1991) conducted a study entitled "Function and Form in First-Grade Writing" The objective of the study was to examine the writing of six first grade children in a "Whole Language" classroom where writing was modeled daily during the "Morning News" and "Writing Skills" which were taught in context. The sample of the study were six first grade children (three boys and three girls). This study addresses two major questions (1) what are the functions and forms of writing in first grade?; (2) in what ways do these functions and forms change throughout the first grade year ?.

The following major findings were revealed from this study. (1) First grade children write for a variety of purposes, change in function appear to be due to children's interests and preferences rather than to their development. (2) Children compose written discourses from the beginning of first grade. (3) Discourse level structure increases in both variety and complexity from beginning to end of first grade. (4) Segmentation increases in conventionality, with sentence segmentation becoming conventional before word segmentation (5) Punctuation, capitalisation, phonemic segmentation and representation, and spelling become increasingly conventional. (6) Discourse and sentence level forms "Follow" function, but orthography does not Changes in orthography are due to development and writing experience

Shook,S.E., Marrion,L.V., & Olilla,L.O.(1989) conducted a study entitled "Primary Children's Concept about Writing" The objective of the study was to investigate concepts about writing on primary children with the use of an unstructured series of interview questions. This survey elicited information from grade 1 and 2 children on their perceptions concerning the general purposes of writing, personal preferences about writing activities, and self-concepts in relation to writing. The majority of the children were aware of the communicative nature of writing. their writing preferences centered around at home help rather than teacher assistance. Findings indicate that children's attitude are an important dimension in understanding their writing development.

Clanton,B.R. (1994), Lesley,C.M. (1991), Shook,S.E., Marrion,L.V., & Olilla,L.O. (1989) revealed that

(1) Children writing depends on their interest and preferences rather than on their development.

(2) Children compose written discourse from the beginning of first grade.

(3) Punctuation, capitalisation, phonemic segmentation and representation, and spelling become increasingly conventional.

(4) Change in orthography are due to development and writing experience.

(5) The factors which influence the quality of their written retelling are, (a) interest of the child (b) amount of time given to complete the written retelling, (c) the opportunity given for social interaction.

(6) Children's attitudes are an important dimension in understanding their writing development.

Studies conducted on listening, reading, comprehension in phonological process

Carol,T.C. (1991) conducted a study entitled "From Listening to Reading : Phonological Processor in Comprehension". The objective was to study the role of phonological information in children silent reading comprehension and listening comprehension.

The following major findings were revealed from this study; (1) in the reading task, no interaction between reading skills and phonological activation is a more basic ability than the types of phonological skills commonly assessed with "Phonological awareness" tasks, (2) in the listening study, kindergarten non-reader did not show the same pattern of phonological confusions in recall than kindergarten and second grade reader showed

William,C.S. (1995) conducted a study entitled "Experimental Investigation of the Relationship Among First and Second Grade Students learning Style Preference, Attitude, and Achievement in Reading and Writing When Using Thematic Units" The objective was to investigate the relationships among the instructional method of whole language that uses thematic units for teaching reading and writing, learning style perceptual preferences, and grade level, and their effects on the reading and writing achievement and attitude scores of first- and second grade students enrolled in a suburban New York school district. This research. (a) identified individual learning style perceptual preferences of 145 students using the Learning Style Inventory . Primary; (b) compare the pre and post test reading and writing scores when the instruction of new reading material was congruent, and incongruent with the diagnosed perceptual strengths of the student; (c) Assessed whether the main effects and / or interaction of two independent variables (perceptual preference, and instructional condition) significantly affected the three academic independent variables (accuracy, recall, and writing) as well as the independent variable of attitude.

Data were analysed using Analysis of Covariance (2x5) with repeated measures. For all data analysis procedures, hypotheses were tested at the 0.05 level of confidence.

The following findings were revealed; (a) first grade students with visual and tactual perceptual preferences performed significantly better in reading recall in a matched versus a mismatched condition; and (b) second-grade students with auditory perceptual preferences performed significantly better in reading accuracy in a matched versus a mismatched condition.

Scnechal,M. (1995) conducted a study entitled "Individual Difference in 4 Year-Old Children's Acquisition of Vocabulary During Story Book Reading". The objective was to assess how children who differ in vocabulary knowledge learn new vocabulary incidentally from listening to stories read loudly. The sample of this study were 4 -year old children, classified as having either higher or low word knowledge on the basis of a median split of their Peabody Picture Vocabulary Test-Revised standard score.

The following findings were revealed from this study; (1) children with large vocabularies produced more novel words than did children with smaller vocabularies, and children who answered question during the book reading comprehended and produced

more words than did children who passively listened to the story, (2) children either listened to reading of a book, pointed to the picture during the readings, or labelled picture during the reading; (3) children with large vocabularies comprehended more novel words than did children with small vocabularies; (4) children who actively participated by labeling or pointing learned more words than did children who listened passively to book readings

Carol,T.C. (1991), William,C.S. (1995), Scnechal,M. (1995)

Findings :

(1) In the reading task, no interaction between reading skills and phonological activation is a more basic ability than the types of phonological skills commonly assessed with "Phonological awareness" task.

(2) In the listening study, kindergarten non-reader did not show the same pattern of phonological confusions in recall than kindergarten and second grader reader showed.

(3) First grade students with visual and factual perceptual preferences performed significantly better in reading recall in a matched verses a mismatched condition; (b) second grade students with auditory perceptual preferences performed significantly better in reading accuracy in a matched versus a mismatched condition

(4) Children with large vocabularies produced more novel words than children did with smaller vocabularies, and children who answered questions during the book reading comprehended and produced more words than did children who passively listened to the story.

(5) Children with large vocabularies comprehended more novel words than did children with small vocabularies.

(6) Children who actively participated by labelling or pointing learned more words than did children who listened passively to book readings.

Studies Conducted on rhyme, rhythm and song

Cathey,S.S. (1991) conducted a study entitled "Emerging Concept of Word Exploring Young Children's Abilities to Read Rhythmic Text" The objective was to explore the possible facilitative role of rhythmic versus non-rhythmic text in the development of concept of word in kindergarten children

The following findings were revealed from the study, (1) Significant relationships were found between concept of word and other variables including alphabet knowledge, and cognitive development. Both alphabet and orthographic knowledge appeared to have reciprocal relationship with the development of the concept of word (2) significant improvement in taping both simple and complex rhythms as concept of word matured; (3) alphabet knowledge, othographic knowledge and cognitive development also contributed significantly to the development of both initial consonant development and concept of word development.

Lorelei,F. (1994) conducted a study entitled "Facilitating Print Awareness and Literacy Development with Familiar Children's Song". The objective was to determine what role the lyric and rhythms of familiar children's songs, especially those with respective, predictable patterns have as reading materials in facilitating the print awareness and literacy development of young children. Two school sited with comparable ethnic and socio-economic background, as well as academic achievement data were selected as control and treatment groups. Both schools follow a curricular approach that is described as "Whole Language"

Over the study, fifteen songs were selected by the treatment subjects to follow this procedure presentation on a chart, with sentence strips and word cards in a pocket holder, as a class Big Book, and as an individual student book to take home.

The following findings were revealed from this study; (1) The comparison of the lesson plans indicated closely similarity of strategies used, aside from the song strategy (2) The comparison of writing samples demonstrated that emphasis was on product in the control group, and on process in the treatment group (3) The audio-taping session revealed that while both groups continued to enjoy the task and rely on their memory of the text or lyrics, the treatment group demonstrated more frequently of correct or appropriate reading behaviours (4) The videotaping sessions revealed within the treatment group a growing involvement, confidence, competency and enthusiasm in reading behaviours.

Linda,S. (1994) conducted a study entitled "The Function of Questions and Answers in Mother Goose Nursery Rhymes" The objective was to explore the function of questions and answers in Mother Goose Nursery Rhymes. The study involved a review of the relational for

the children knowing the nursery rhymes, establishing the rhymes' cultural and educational implications.

The study continued with a description of the educational context into which the researcher's methods about the information of the questions and answers in Mother Goose Nursery Rhyme would fit. The study reviewed role of teachers, strategies for discussion, and participation of the students. The researcher's method stressed a textual analysis of the nursery rhymes. The researcher emphasised that the method described in the study was its main contribution. This method addressed ways of augmenting a teacher's understanding by analysing five nursery rhymes involving questions and answers. A chart of literacy and Poetic Elements was provided and five demonstration analysis were written for teachers to read

The major finding revealed from this was teacher understanding which, in turn, would be conveyed to their students in elementary school classroom, increasing discussion, participation, and enjoyment of literature.

Lauren,L. & Anne,C. (1995) conducted a study entitled "Factors Affecting Children's Reading of Rhymes : Reading Ability, Word Frequency, and Rime- Neighborhood Size". The objective was to examine the influence of reading ability, word frequency, and rime-neighbourhood size (the number of single syllable words with the same rime) on word and non-word recognition. The sample of the study was forty 1st and 2nd graders who read 53 words and 27 non-words containing rimes from different-size neighbourhoods.

The following findings were revealed from this study; (1) children reading at or below a 2nd grade level were less affected by rime-neighbourhood size than children reading at or above a 3rd-grade. (3) Rime from large neighbourhoods were read correctly more often in lists and stories than rimes from moderate or small neighbourhooods, particularly in low-frequency words. (3) As children learn to read, they become increasingly sensitive to rime-neighbourhood size.

Gonarkar,M.S. (1993) conducted a study entitled "A Study to Compare and Analyse British Traditional and New Original Indian Nursery Rhymes and to Determine Adaptability of New Rhymes for the Pre-school Curriculum". The objectives were, (i) to analyse and compare theoretically 10 new and 10 old nursery rhymes; (ii) to analyse and compare 30 new and old

rhymes by 3 linguists with three points along criteria G scale, (iii) to obtain opinions of parents and teachers and correlate the findings on the basis of three aspects namely, educationally economic and social; (iv) to find out comprehension of first standard children as regards the words and illustrations of new and old rhymes by using three tests constructed by the investigator; and (v) to collect opinions and attitudes of parents and teachers on sub issues like need for new rhymes, exposure to pre-school education, large print for rhyme books etc

The sample comprised 600 students with equal number of boys and girls, studying in first standard Three teaching staff members from Post Graduate Departments having more than 20 years of experience were invited for the analysis of 30 old and 30 new rhymes

The following findings were revealed from this study (1) The new rhymes were significantly better than the old rhymes. (2) The tests developed were highly reliable . (3) In the first test 70 % of the subjects did not understand certain words of British old rhymes like fetch, spout, stuck, etc. (4) In the second test 85 % of the subjects did not understand words like lads, dicky birds, plum, bo-peep, simon etc. (5) In the third test 52 % of the subjects did not identify characters and situations from British old rhymes like Baker's man, cattle, shoe, lamb etc. (6) Objective analysis and comparisons of new and old rhymes with G scale showed a pattern of an inverse relationship in the study.

Walton,P.D. (1995) conducted a study entitled "Rhyming Ability, Phoneme Identity, Letter Sound Knowledge, and the Use of Orthographic Analogy by Pre-readers". The assumption of the study were; (a) Beginning reader can make orthographic analogies based on rhyming and (b) considerable experiences recording individual letter sequences involving phonemes is a prerequisite. The study tested the first model and had implications for the second model. Rhyming, phoneme identity, letter sound knowledge, and vocabulary were measured in 66 pre-schoolers with a mean age of 5 years 8 months. (Children then received teaching that varied experiences with onset and rime and with high pre-reading skills can make orthographical analogies when beginning to read. However, final phoneme identity, not rhyming, was the best discriminator between children who read analogy test word and those who did not.

Keith,T.G., William,E.T., and James,W.C. (1997) conducted a study entitled "Effect of Rime-Base othographic Analogy Training on the Word Recognition skills of children with reading Disability", The objective was to determine wether metacognitive strategy training in the use of rime spelling units would be an effective intervention strategy for children with reading disability. The sample of the study comprised thirty six disabled readers who were randomly assigned to 1 and 2 training groups, a rime analogy training group or an item specific training group. Post-treatment measures were taken at the completion of the training, and 1-year follow up data were obtained from the 2 training groups and a sample of 20 normally developing readers.

The following findings were revealed from the study; (1) Systematic strategy training in the use of rime spelling units produced generalised achievement gains and transfer to uninstructed materials and was more effective than training that focused on item-specific learning and sentence - level strategies. (2) The superior post-treatment performance of the rime analogy group over the items specific group was maintained.

Cathey,S.S. (1991), Lorelei,F. (1994), Linda,S. (1994), Lauren,L. & Anne,C. (1995), Ganorkar,N.S. (1993), Walton, P.D. (1995), and Keith,T.G.,Willam,E.T., and James, W.C. (1997).

Findings :

(1) Significant relationships were found between concept of word and other variables including : alphabet knowledge, and cognitive development. Both alphabet and orthographic knowledge appeared to have reciprocal relationship with the development of the concept of word.

(2) Alphabet knowledge, orthograhic knowledge and cognitive development also contributed significantly to the development of both initial consonant development and concept of word development.

(3) The audio-taping session revealed that while both groups continued to enjoy the task and rely on their memory of the text or lyrics, the treatment group demonstrated more frequently of correctly or appropriate reading behaviours

(4) The videotaping sessions revealed within the treatment group a growing involvement, confidence, competency and enthusiasm in reading behaviour

(5) Teacher understanding which, in turn, was conveyed to their students in elementary school classroom, increasing discussion, participation, and enjoyment of literature

(6) Children reading at or below a second grade level were less affected by rime-neighborhood size than children reading at or above a third grade

(7) Rime from large neighborhoods were read correctly more after in lists and stories than rimes from moderate or small neighborhoods, particularly, in low-frequency words.

(8) The new rhymes were found significantly better than the old rhymes.

(9) In the first test, 70% of the subjects did not understand certain words of British old rhymes like fetch, spout, stuck, etc.

(10) In the second test, 85% of the subjects did not understand words like lads, dicky birds, plum, bo-peep, simon etc.

(11) In the third test, 52% of the subjects did not identify characters and words from British old rhymes like Baker's man, cattle, shoes, lamb etc

Studies conducted on picture vocabulary, acquisition and informational picture books

Jean,S.L. (1992) conducted a study entitled "The Effects of Four Types on Picture Vocabulary Acquisition by Students with Developmental Disabilities". The objective was to compare the efficiency and effectiveness of any one picture type with regard to ability. This study measured the acquisition of new vocabulary items by two abilities groups of students with developmental disabilities using picture types (black and white line drawing or photo, colour line drawing or photo). Secondary variables included the position of the picture stimulus during training generalisation from the picture representation to the real objective, cost effectiveness, and social validity of the study

The following findings were revealed from the study; (1) subjects with lower ability required more trials to reach mastery, made a greater number of errors, and maintained less of the trained picture vocabulary than did subjects in the higher ability group; (2) generalisation from the picture to the real object represented by the picture occurred for the majority of students and was statistically significant The position of the stimulus was not a factor in the response patterns.

Michael,K.R. (1994) conducted a study entitled "The Children Viewing and Reading Transactions With Illustrations and Print in Informational Books" The objective was to describe in depth the nature of children's transactions with the visual and textual aspects of informational picture books in a classroom setting

This research used an interpretive, multiple case study design Two sources of data were important : videotape / audiotape transcriptions and participant observations A purposive sample of three first-graders was the focus of the study. Researcher documented each child's transactions with informational books during quite reading time in the classroom and during one-on-one sessions with him. Data analysis resulted in three case report and cross-case analysis.

The children realised six affordances of informational picture books. (1) viewing, (2) reading, (3) socializing, (4) playing, (5) counting, and (6) drawing. (each represented a different opportunity that the children found to link personal intention with the feature of the book. As they engaged with the books, the children constructed meaning by : (1) making connections to prior knowledge, life experiences, literature, and media, (2) speculating and asking questions about illustrations and text, (3) analysing and evaluating pictures and words and (4) using body actions and their voices.

The findings revealed that; (1) the children viewing was a recursive process embedded in a linear process and was dependent upon purpose. (2) Understanding of culturally based picture conventions influenced meaning making. (3) The children's definition of the terms `picture' was unstable and often was not shared by experienced viewers.

Graves,M.F.(1989) conducted a study entitled, "A Quantitative Study of Elementary school Children's Vocabularies". The objectives of the study was to investigate quantitative and qualitative aspects of students' vocabularies. Students for the group test were 216 higher, middle and lower ability 2nd, 4th, and 6th graders. Subjects for the interviews were 8 high and low ability 3rd and 5th graders. All subjects were from a middle class suburban of a large midwestern city The group test consisted of two forms of 36 items, multiple choice test comprising words at various difficulty levels. Subjects received one form of the test as reading test and the other as a listening test in a counterbalanced fashion The interviews required subjects to give two meanings for words in isolation, identity two meanings

of words presented in two contexts, and distinguish between the meaning of words. An ANCOVA on the group test indicated significant (P<0 01) differences caused by the grade, ability, mode, and word difficulty On the interviews, students performed best at identifying multiple meanings for isolated words best distinguished good and poor readers

Jean,S.L. (1992), Michael, K.R. (1994), Graves,M.F. (1989)

Findings :

(1) Subjects with lower ability required more trials to reach mastery, made a greater number of errors, and maintained less of the trained picture vocabulary than did subjects in the higher ability group.

(2) Generalisation from the picture to the real object represented by the picture occurred for the majority of the students and was statistically significant

(3) Understanding of culturally based picture conventions influenced meaning making.

(4) The children's definition of the terms `picture' was unstable and often was not shared by experienced viewers.

(5) Significant difference between words at various difficulty levels on reading test and listening test was caused by grade, ability, mode, and word difficulty.

(6) Students performed best at identifying multiple meaning in context, whereas giving multiple meanings for isolated words best distinguished good and poor readers.

Miscellaneous

Swalley,R.J. (1991) conducted a study entitled "A Comparison of Musical Recall achievement of First Grade and Fifth Grade Students After Lecture Instruction and After Question Recall Instruction". The objective was to compare the recall musical achievement scores of first grade girls and boys on a criterion referenced pre-test / post-test after lecture recall instruction and after question recall instruction. The primary variables were instruction, age difference, gender, and musical aptitude. Achievement was the dependent variable.

The sample of the study were first and fifth grade students attending school in Eastern Wisconsin They received recall instruction by teacher-initiated declarative statements, and the other half of the first and fifth graders received recall instruction by teacher- instructed questions Data were analysed by ANCOVA

The major findings which were revealed from the study includes, (1) no significant difference between score of subjects instructed by a teacher using lecture recall and scores of subjects instructed by a teacher using question recall after either the rhythm or melody lesson, (2) there was a significant difference between first grade subjects and fifth grade subjects after the rhythm lessons and no significant difference between first grade subjects and the fifth grade subjects after the melody lesson, (3) there was no significant difference between girls and boys after either rhyme or melody, lesson and (4) no significant difference between lecture recall achievement and question recall achievement, question recall consistently produced higher mean achievement than did lecture recall after rhythm lessons, and lecture recall produced higher mean achievement score than did question recall after melody lessons

Black,R.R. (1994) conducted a study entitled "Functions of Language and Conditions for Learning in a Whole Language First-Grade Classroom". The objective was to know why for what purposes, and how, under what conditions, language and learning take place in a whole language classroom. The sample of the study were twenty-one first graders and their whole language teacher. They were observed over a seventeen week period as they interacted in whole group, small groups, and with partners during oral and written language episodes

The following findings were revealed from this study; (1) the whole language theory-driven practices were child-centered, community centered, and meaning-centered. (2). By identifying the purpose of language in this context and the conditions in which meaningful language and learning occurred, a greater understanding of the dimensions of a whole language classroom was developed.

Lao,N.M. (1995) conducted a study entitled "Music Problem Solving Strategies of Five to Seven Year Old". The objective was to examine the strategies or reflections in action, that 5, 6, and 7 year old use in aural reconstructing a familiar song,"Row, Row, Row Your Boat" from its chunks, or sub-phases, under three conditions rhythm only, pitch only, rhythm and pitch combined. Subjects physically and mentally manipulated the blocks into the order they liked as they listened to the chunks of music being played on an electric keyboard All the lessons were videotaped, transcribed, and examined for patterns in children's actions and comments made while performing the tasks

Twelve strategies belonging to three developmental levels were identified Although subjects in all three age groups used it, 7 years old were most likely to use the most cognitive advanced strategy. Five and six year old were able to obtain orders that agreed with the song using lower level strategies Overall scores were higher for the combined task and increased with age

Data suggested that cognitive advanced from pre-operational to concrete operational stages most likely take place between the ages of five and six, when children's strategies in musical problem solving become more diverse as well as increasingly cognitive in nature

Results indicated that 5 to 7 year old may have very sophisticated logic behind their constructions of musical concepts. These constructions may be more meaningful to them than those traditionally presented and accepted as correct.

Edwin,D.R. (1994) conducted a study entitled "Perceptual Modalities in Music Listening Among Third Grade Students". The objective was to qualitatively examine how different perceptual reinforcements of a musical stimulus affected children's sensitibilities to musical content by probing what they retained in short term memory after listening to longer musical experts.

Five research questions were examined , three, at the individual level and two at the group level analysis. The main research question for the individual level was: what qualitative characteristics are found in the retrospective verbal reports found in the retrospective verbal reports of each individual third grade student when repeated music listening experiences are presented in each of the there perceptual modality combinations: auditory only (A) auditory reinforced with visual stimuli (AV), and auditory reinforced with kinesthetic stimuli (AK)?

To answer the research question, sixteen third grade students (8 male and 8 females) were presented with six repeated-listening experiences, two each in the A, AV, and AK presentation modes. Their audiotaped and videotaped responses were transcribed for later analyses. Examination of the verbal report led the author to categorise student responses into fourteen different categorise of the statements.

The following findings were revealed from this study, (1) students were able to perceive and process auditory, visual, and kinesthetic stimuli to varying degrees as they listened to music, (2) student's perceptions often varied depending upon the perceptual modality

stimuli they were given; (3) some students appeared confused by the addition of certain perceptual stimuli

1.4.2 SYNTHETIC VIEW OF THE RELATED LITERATURE

The review of related literature which the researcher came across during the process of research work has been presented in two sections. The first section is related to studies on computer and children learning process through computer especially in elementary schools and; section two deals with the studies related to pupil learning process involving rhyme rhythms, songs, music and different learning processes in general in elementary schools

SECTION ONE

This section is specially dealing with studies on identified sub-theme, i.e., based on different variables involved. These are (1) Studies on different modes, (2) studies on interactions with computer with reference to understanding, (3) studies on spelling, writing, composition, and vocabulary, (4) studies on reactions, attitude and motivation of the students towards computer, (5) studies conducted on comparative studies on achievement, and (6) miscellaneous related studies.

Studied on different modes

The researcher identified 13 studies on different modes of presentation through computer between 1991 and 1995. In these studies the major variables were dealing with reading comprehension, listening comprehension, compositional concept, reading skills, satisfaction, memory recall, attitude towards instruction, language acquisition, sight reading, word recognition, vocabulary, learning on instruction, learning effect with different modes of computer i.e., picture, picture with word, text, text with sound, text with moving picture plus sound, tactile with rhythmic, animation, graphics map, colour and black and white graphics The sample of all above studies were within 100 elementary pupils selected randomly or purposefully within the age range 6-12 years old. In most of the cases, CAI materials developed for different purposes were analysed by ANOVA, t-test, randomised block design for analysis purpose within pre-test, post-test control group, post-test single group design, pre-test post-test single group design

The findings given in this section leads the to following direction, that there is a difference between two groups of pupils in pre-test and post-test and graphics, animation, colour is better than single mode But it is not clear from the above studies as to which mode is better than which mode as well as in what situation and, a trend is not shown in all of the studies. It is not clear from the studies whether presentation through computer in different modes of learning occurs or not and with what variables

Studies on interaction with computer with reference to understanding:

The researcher identified four studies among this category between 1991 and 1993 In these studies, major variables were interaction, learning understanding, language acquisition, instructional preparedness. The sample of these studies were kindergarten, second grade pupils and pupils of 3 to 5 year old.

The findings leads to the conclusion that traditional method is more preferred to interacting with computer, and, higher grade pupils performance is better than that of kindergartners. The increased computer use by pupils in urban environment promoting meaningful social interactions, effective use of computer instruction and awareness about computer.

Studies on spelling, writing, composition and vocabulary:

The researcher identified 12 studies related to spelling, writing, composition, and vocabulary conducted between 1991 and 1994. These are studies involving different variables, such as, spelling acquisition, writing beats on computer visual composition and linguistic composition, instructional time, student-teacher satisfaction, length of vocabulary, computer used writing, problem solving, literacy development, comprehensive writing, reading computer, computer based reading, writing conversation, length of writing product, attitude towards writing. The sample of the above studies were drawn randomly, purposefully, from first grade to sixth grade pupils In most of the studies, tools were computer packages, interviews and observation schedules. The analysis of the data were carried out quantitatively as well as qualitatively. The quantitative data were analysed through ANOVA and ANCOVA statistical techniques

It is revealed from the findings that computer as a tool help the pupils in language development in writing, reading, spelling and, composition but not all elements of language

which need to be explored with the medium Pupils are interested to work in computer than traditional method and they respond differently to computer based on their performance and abilities on computer.

Studies on reaction, attitude, and motivation of the pupils toward computer

The researcher identified four studies conducted between 1991 and 1994. dealing with the following variables: writing attitude, motivation, attendance, and attitude towards computer packages. The sample for these studies were drawn from first through six grade pupils in control and experimental groups by using CAI, observation schedule and questionnaire as tools for data collection. From the findings, it is revealed that there is no difference between attitude and motivation on control and experimental situation. There is a tentative link between improving writing using computer and efficient thinking shown and pupils were benefited from CAI to develop computational concept and problem solving.

Studies on comparative achievement on computers

The researcher identified 13 studies conducted during 1991 and 1994. These studies were conducted mainly on achievement related to some variables like, mathematics, problem solving, syntactic, orthographic, graphophonic, written language , language achievement, reading comprehension, traditional instruction, language art, self efficiency, attitude towards low SES, on screen and hand-on-manipulation. The sample for these studies varies from kindergarten through six grade pupils. Most of the studies used quantitative approach and few are on qualitative approach. These studies were done in experimental situation mostly and used t-test, and ANOVA as statistical techniques

From the findings, it is clearly understood that pupils are benefited from computer software for developing certain abilities i e., problem solving, mathematics, language, geometry, and logic etc. But the above studies do not give a clear idea on which elements of language are developed and which are not developed through computer Which need to be explored. Also it is not clear from the above studies as to which level pupils gain mastery on particular concepts or skills through computer. So there is need to find-out a solution to the above stated problem by extensively using computer in this age group pupils.

Studies on computers and their effect on language and social interaction on pupils.

The researcher identified three studies conducted on these variable between 1991-1994. these studies were conducted on variables like, language, social interaction, task difficulties, academic performance, discretionary activities and recreational behavior with sample of kindergarten, third and fourth grade pupils. For data collection, interview and CAI packages were used as tools for conducting the research. The following conclusions were drawn from the findings; Pupils using computer instruction are social in nature, co-operative, helping behaviour on task regardless of varying computing abilities The pupils of English Primary Language took two times more than English Second Language and, Computer software had an effect on language behaviour.

Miscellaneous studies on computer

The researcher identified seven studies conducted on different areas on computer between 1991 and 1995. The major variable of these studies were; discourse skill, methods, achievement, mode of presentation, counting skills, perception of teachers, pupils, parents and administrator, syntax, semantic and symbol, The sample of these studies were drawn from kindergarten, elementary aged pupils, teachers, and experts. They used computer software and interview as tools for data collection and analysed the data through ANCOVA within pre and post-test group as a statistical techniques.

From the above findings, it has been found that, achievement of pupils are not affected by method of presentation in support of CAL and it is clear that there is no relation among treatment and time duration. It Is difficult to introduce computer in school due to time schedule and less equipment available. It was found that despite real age difference between teacher and students , school students are performing to the same standard as their teacher.

SECTION TWO:

This second section presents six sub-themes according to different variables involved. These are (1) studies developing language through musical program and its effects on the reading achievement of the children, (2) studies on writing ability, (3) studies conducted on listening, reading, comprehension in phonological process, (4) studies conducted on rhyme, rhythm and song, (5) studies conducted on picture vocabulary acquisition and informational picture books, (6) Miscellaneous.

The researcher identified 21 studies in this section These studies were conducted between the year 1989 and 1997 These studies were considered according to different variables related to the present study. Most of the studies were conducted in elementary school level with objectives, such as, language development, comprehension in phonological process, reading ability, word meaning, vocabulary, through music, rhyme, rhythm, picture book, and different modes of presentation and their effects.

It is revealed from all the above findings that; (1) the presence of music has no effect on learning on pupils and also children did not suffer academically by this program, (2) writing ability depends on their interest and preferences, it starts from standard one and understanding their writing development depends on their attitudes, (3) first grade pupils with visual and factual perceptual help in reading recall and auditory perceptual help in reading accuracy, 4) the pupils with large vocabulary produce novel words and who answer questions during the book reading comprehend better, (5) alphabet knowledge, orthographic knowledge and cognitive development contributed in both initial consonant development and concept of word development, (6) the new rhyme is always better than old rhyme and pupils studying below second grade level were affected by rime-neighborhood size than higher grade, (7) understanding of culturally based picture conventions influenced meaning making and difficulty meaning of word depends on listening, reading, reading caused by grade, ability, mode and word difficulty for the grade, (8) question recall produce higher achievement in, rhythm lesson.

The conclusions in the above studies leads the researcher to formulate the research problem. It gives the methodological insight and, rationale of the present study.

1.5.0 RATIONALE OF THE STUDY

We think of rhyme as a literature for the young children. We introduce rhyme to very small children unexplained, unanalysed, un-scrutinised and un-interpreted. We offer rhyme to child as something valuable when they are very young, and we rightly ask ourselves, why do we do this? What effect will it have on them? What meaning does it hold? What meanings will be accessible even unconsciously to them ? Such questions beg others what is the meaning of meaning? is meaning important at all, and if so, then how do we arrive at the meaning of rhyme and why ?

We know that a rhyme is easily memorised because of repetition of identical or closely similar sounds arranged at regular intervals There are different types of rhymes, such as, "Tongue Twister" which is very difficult to pronounce, "Rhyming Riddle", where it is very difficult to identify what is given in the rhyme for young children and "Verse Stories" which are difficult to remember for elementary stage pupils

Rhyming is an integral component of elementary education A child starts to learn rhyme through different means. Sometimes rhymes are introduced to them before coming to school by their parents. Parents recite the rhymes, poems, or songs in front of their children with emotion and expectation that the children will be able to recite the rhyme They rarely consider any learning element when children are singing. They consider only whether their children can recite the rhyme. In the formal setting like in nursery schools and primary schools, teachers are using the rhymes with different forms Sometimes they are reciting with students, may be, matching their movements with pupils in form of a music system, sometimes they are watching video along with their students and acting accordingly, sometimes they are playing games with counting numbers with their pupils on the ground Here the question is that, is there any skill developed by doing these activities? Are there some skills involved in the process of rhyming? Which level of skills of Listening, Speaking, Reading, Writing they pick up with respect to lexicon, grammar (syntax), phonetics? The related literature shows that Computer Assisted Learning Material (CALM) can foster language skills among very young children in elementary level

In the process of finding solutions to the above mentioned questions, the researcher came across a medium, namely, computer which can be used by very young children in classroom, interactively. They are generally playing games on computer. Are skills, such as, search, motor-muscle operation, eye hand co-ordination, concentration on particular task, etc. developed ? What are the relative effects of graphics, animation, and music on children while they are playing games through computers? Can computer be used as medium for developing educational skills needed for the children at the primary level ? So, the researcher thought of developing CALM for young children on one of the school subjects in primary class. The related studies reveal that the use of computer improves intellectual activities among first and second grade students, such as, creativity and desire to study (Keiko, 1991)

Some studies have been conducted on CALM in elementary class in different modes These mode are text, picture with words, text with sound, animation, pictorial and non-pictorial presentations No studies have been conducted to find out the effectiveness of computer as an instructional medium in different modes in terms of Language ability, Word meaning, Analytical understanding, Writing ability, Comprehensive understating, and Recitation ability of the children. There are very limited computer curricula at the elementary school level, and also CALM is scarcely available for those institutions who attempt to include Computer Based Curricula for their elementary school children. An attempt has been made to answer certain questions relating to implementing the computer based curricula, what can be incorporated in the curriculum either for teaching about computer or teaching by using the computer ?, what are the contents that can be taught through computer?, what should be the contents that can be practiced through computer while teaching to the pupils ?, what are the limitations of the use of computer?, How can computer be used to make a significant deference in the educational programme to improve or enhance learning, and to provide needed skills ?. It is a step to answer some of the questions which are in the mind of the researcher and to provide a substance for computer curricula and tiny package for tiny learners. The present study attempts to **explore effectiveness of computer assisted learning material on rhyme in different modes.**

1.6.0 THE PRESENT STUDY

The title of the present study is **"Exploring Effectiveness of Computer Assisted Learning Material on Rhymes in Different Modes".**

1.7.0 OBJECTIVES OF THE STUDY

1 To develop Computer software on rhyme in Text (T), Text Music (TM), Graphics Text (GT), Graphics Text Music (GTM) and Graphics Text Music Recitation (GTMR) modes.

2 To study the effectiveness of CALM prepared in different modes for learning the rhymes in terms of Word meaning (Lexicon) of the students

3 To study the effectiveness of CALM prepared in different modes for learning the rhymes in terms of Analytical understanding of the students

4 To study the effectiveness of CALM prepared in different modes for learning the rhymes in terms of Comprehensive understanding of the students

5. To study the effectiveness of CALM prepared in different modes for learning the rhymes in terms of Writing ability of the students.

6 To study the effectiveness of CALM prepared in different modes for learning the rhymes in terms of Recitation ability of the students

1.8.0 HYPOTHESES OF THE STUDY

H01. The adjusted mean achievement test scores on Word meaning (Lexicon) of the students belonging to T, TM, GT, GTM and GTMR modes will not differ significantly when class achievement test score in English language is considered as covariate

H02. The adjusted mean achievement test scores on Analytical understanding of the students belonging to T, TM, GT, GTM and GTMR modes will not differ significantly when class achievement test score in English language is considered as covariate

H03. The adjusted mean achievement test scores on Comprehensive understanding of the students belonging to T, TM, GT, GTM and GTMR modes will not differ significantly when class achievement test score in English language is considered as covariate.

H04 The adjusted mean achievement test scores on Writing ability of the students belonging to T, TM, GT, GTM and GTMR modes will not differ significantly when class achievement test score in English language is considered as covariate

H05. The adjusted mean achievement test scores on Recitation ability of the students belonging to T, TM, GT, GTM and GTMR modes will not differ significantly when class achievement test score in English language is considered as covariate

H06. The adjusted mean achievement test scores on Language learning of the students belonging to T, TM, GT, GTM and GTMR modes will not differ significantly when class achievement test score in English language is considered as covariate

1.9.0 OPERATIONAL DEFINITION OF THE TERMS

Lexicon: By lexicon the investigator means the vocabulary of a particular language i,e , the complete set of meaningful unit in a language; the words.

Analytical understanding: Analytical understanding is understanding of the word order to express syntactic relationship. In the present study the analytical understanding means the understanding of the different segments of a rhyme and their relationship.

Comprehensive understanding: By Comprehensive understanding with respect to the present study the investigator means the understanding of the theme of the rhyme

Writing ability: By writing ability the investigator means the ability to write rhyme in english language using grammar rules.

Recitation ability: It is an elocutionary delivery of a rhyme without the text i.e., the repetition something got by heart.

Language ability: In the present study the pooled scores on lexicon, analytical understanding, comprehensive understanding, writing ability and recitation abilities represents the language ability.