CHAPTER 2

ELT PEDAGOGY FOR PROMOTING READING EFFICIENCY

2.1 THE IMPORTANCE OF READING

The best way to learn to read is by reading. It may seem paradoxical but it is true that many children do not read because they are not good readers and they are not good readers because they do not read. Breaking this vicious circle is a challenge to all language teachers.

In the Indian curriculum, students get enough training in listening and speaking. As they are overburdened with home work and exams, they have enough opportunities to hone their writing skills but providing opportunities for improving reading skills is much neglected. Therefore, reading should be the core of the language syllabus. While teaching English as a second language in secondary schools, books can be used to provide situations for learning. Only by reading can students acquire the speed and skill for practical purposes. The quantity and quality of reading also determine further education. Building up students' personality and general knowledge in this information-thirsty age depends on reading. All said and done, reading widens and deepens experience itself.
Downing's review of reading situations in 14 countries gives evidence of the social importance of reading. Among the countries reviewed, USA showed the greatest concern for problems of reading. The International Reading Association (IRA) has its headquarters in USA. Downing's study showed an increasing awareness of the problems of literary standard in Britain. In India, dissatisfaction had been expressed over poor standards of reading of students and there was growing concern for improving reading standards "in the face of numerous serious difficulties of all kinds.

In India, children come from various language backgrounds but meet on the common platform of learning English as a second language. Because of the language mismatch they are unable to associate their past experience of speech in their mother tongue with the writing they have to learn to read in school, which is in English. This sociolinguistic influence leads to cognitive confusion and may become overpowering for many students even if they exhibit a positive effect towards the task of learning English in L2. There is a great need for developing reading skills in English. The English language is a library language in India and a 'window to the world' besides being the medium of instruction in most of the educational institutions. Research reports estimate that 1,200,000 significant articles and nearly a million research reports are published in English every year. Taverner points out that one third of the gross national product of the

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2 Ibid., pp. 134-138.

United States is devoted to producing information, a great deal of which is in print, indirectly hinting at the significance of reading teaching.  

Throughout the history of language teaching, reading had been approached as part of the other skills, it was only in the twentieth century that reading achieved complete independence.  

In order to formulate theories on the teaching of reading, an understanding of the reading process is essential. Irrespective of the methods teachers employ in the classroom, a study of how the process of reading actually happens is warranted. How do students really read? What goes on in their mind while they are reading? Do they employ any strategies and if so what kinds of strategies? Are these strategies common to all students? What kind of teaching strategies do teachers employ to teach reading? These are important issues discussed in the next two sections.

2.2 THE PROCESS OF READING

Reading research is just a little more than a hundred years old. The earliest works were Emile Janal's paper on eye movements published in 1879 and James McKeen Catell's paper on seeing and naming letters versus words published in 1886. It was not till the mid 1960s that any concrete

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attempt was made to conceptualize theories about the reading process. Studying reading from the psychological perspective added a new dimension to research in reading.

Both Smith and Goodman view listening and reading as parallel active processes. Smith believes that reading is only superficially different from the comprehension of speech. Goodman sees reading and listening as alternate forms of the same language process and asserts that reading is language.\(^7\)

The reading process in its initial stage begins with the learning-to-read phase. This phase has been divided by Fitts and Posner into 3 phases - the cognitive phase, the mastering phase and the automaticity phase.\(^8\) The learner consciously concentrates on developing the skills of reading in the cognitive phase. Practice to master the skill is the key in the mastering phase. In the automaticity phase, the learner goes beyond the mastery phase and performs the skill without conscious effort. Though the three phases are not clearly distinguishable into watertight compartments, they may overlap each other. A reader becomes a fluent reader when he reaches the automaticity phase so that he decodes print and processes meaning simultaneously without any effort and without being aware of it. Reading thus becomes a naturally free flowing process from one point to the next.

Smith and Goodman suggest that reading ability depends on the reader’s use of linguistic and non-linguistic information to make predictions about what is coming next. Goodman calls this "a willingness to take part

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in the psycho linguistic guessing game" while Smith calls this "a readiness to make guesses". Whether the employment of prediction is good and whether it is the only way all readers read is arguable. Mostly, what is 'next' in 'predicting what comes next' is debatable. It has been variously defined as sentence, paragraph and chapter. Also, no definite method for developing the prediction technique in reading has been developed yet. The difficulty lies in taking into account several acceptable answers for a given idea to be predicted in the reading process.

Is the knowledge of functioning of language essential for students to learn? This is the question teachers encounter while acquainting learners with the process of reading. There are two conflicting points of view regarding this question. That learners need not have a linguistic awareness of reading is agreed upon by Mattingly, Yetta Goodman and Carolyn Burke (1976), Piaget (1959), Goodman and Smith (1971). The importance of linguistic awareness because "rejection of any teaching about language seems to ignore the important 'mathetic' functions of speech described by Halliday. According to Halliday's observations, these 'mathetic' functions lead the child to become aware of language itself." In the Indian curriculum, where English is taught as a second language, imparting of knowledge about the language is found to be essential. Because linguistic awareness helps in understanding the meaning and structure of the text. Linguistic awareness and reading have a symbiotic effect on each other so

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11 J.Downing, Reading and reasoning (W & R Chambers, 1979) p.33.
that being linguistically aware enhances reading comprehension and the process of reading helps in becoming more linguistically aware.

It is this awareness that makes the distinction between a beginner and a fluent reader. A beginner concentrates more on decoding the language in order to extract meaning from the text. It is only with reading experience that comprehending while reading takes place naturally without paying conscious attention to the act of decoding.

There are many models to describe the process of decoding while reading few with regard to the direction of information processing while decoding print to derive meaning. For instance, the Rumelhart model suggested that information processing is linear, that is, information is processed in a single direction. But the reading process involves the interference of information in the higher stage with information in the lower stage. Thus the linear model failed to account for intermediary occurrences in reading. What was necessary was an interactive model permitting a merger of higher and lower stages of processing. Interactive models of reading appeared to provide a more accurate conceptualization of reading performance than to strictly linear models. Interactive models were also in a better position to explain the difference in the use of linguistic data between good and poor readers.

After looking at decoding from the view of the direction of the information processing, it becomes necessary to consider the psycholinguistic process involved in decoding. This was an area of controversy centering on the pertinent question whether in fluent readers, comprehension was

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dependent on the phonological process or whether it depended directly on visual input. Greg Brooks argued that they can be collectively called 'single route' theories as they assumed that only one of the two routes existed. Brooks suggested a third and logical possibility where "both routes exist and are active, either at different levels of fluency of the reader, or at different levels of difficulty of the text, or at different stages between first learning to read and becoming fluent". He called it the "parallel" model which has been diagrammatically represented below.\(^{13}\)

![The "Parallel" model of reading](image)

**Fig.2.1**

The "Parallel" model of reading

According to the parallel model, while reading, visual processing and phonological processing take place simultaneously as the reader comprehends. The parallel model puts the debate of the single route theories to rest.

In decoding, it can be seen that meaning and code are complementary to each other. The cognitive clarity theory proposed by Downing claims to give equal weightage to both and lays emphasis on the cognitive phase of learner understanding. It may roughly be summed up as follows: The creators of the writing system view language as a visible code whose linguistic awareness includes the awareness of the communicative function of language and certain features of spoken language. On the part of the readers, the process of learning to read is a rediscovery of the functions and coding rules of the writing system. This rediscovery depends on the readers’ linguistic awareness. It is the same linguistic awareness to which the creators of the writing system had access. Children while learning to read, begin with a cognitive confusion about the purposes and technical aspects of language but gradually work themselves out of confusion into clarity. This alternate cycle of confusion and clarity continues throughout the later stages of reading as learners come across new subskills adding to their overall repertory of the reading skill.

On comparing Downing’s cognitive clarity theory with Goodman’s reading theory, it may be observed that both of them lay stress on linguistic awareness. Downing’s hypothesis of confusion and clarification is analogous to Goodman’s prediction and confirmation.

Reading comprehension is governed not only by the reader’s ability to decode print and derive meaning from it but more importantly by his knowledge of the language and his experience of the world. This is what the reader brings to the print. Building on the insights provided by Goodman, the reading process has been illustrated as follows:

What the Reader Brings to the Print

Implicit knowledge of the language and how it works

Experience of the world

The Reading Process

1. Sampling graphic, syntactic, semantic clues.

2. Predicting both structure and meaning on the basis of selected areas.

3. Testing the prediction.

4. Either confirming the prediction or correcting if necessary.

Fig. 2.2
The reading process

What the reader brings to the print is due to his prior knowledge of the language and of the world. This prior knowledge that the reader brings to the text is well explained in the schema theories of comprehension (Ortony, 1978). The schema is a high level domain-specific cognitive structure which can be viewed as "a framework of knowledge operating a superordinate fashion to interpret information".15 The schema is

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equivalent to other building blocks of knowledge i.e., "schemata" (Rumelhart, 1978), "frames" (Minsky, 1975), "scripts" (Schank and Abelson, 1977) and "macrostructures" (Kintsch and van Dijk, 1978). Research based on schema theory has shown that reading comprehension varies from one schema to another i.e one domain of knowing to another.\[16\]

It is interesting to note that the schema theory gains significance in this study because of its applicability to the conceptual network of knowledge/information in Artificial Intelligence studies where the schema can be directly equated with 'frames' and 'scripts'. Frames are data structures of knowledge representation in AI. Scripts are analogous to frames but are more specialized to deal with even sequences. Frames and scripts are formulations of scientists working on AI. To put it simply, 'schema' in reading theory is the existing assumptions or background knowledge in language. Every act of comprehension involves one's knowledge of the world as well. There is a three-way distinction within schemata. It can be divided into linguistic schemata, content schemata and formal schemata.\[17\]

1. Linguistic schemata - reader's prior linguistic knowledge
2. Content schemata - reader's prior background knowledge of the content area of the text
3. Formal schemata - reader's prior knowledge of the rhetorical structure.


\[16\] Ibid.

The concept of schema is domain-specific. It is a representation of a particular or specific aspect of knowledge containing slots to which values can be assigned. Combinations of schema form conceptual networks to characterize the nature of knowledge. The interpretation of a text depends on the relationship between the existing schema and the input information. This involves a top-down search or a bottom-up search. A top-down search is a concept-driven search for values which 'fit', that is, meet the variable constraints of a knowledge frame: and a bottom-up search is a data-driven search for a knowledge frame that will accommodate particular values. Interpretation of the text involves a convergence of both the searches besides using knowledge in relevant frames. During the process either new schemas are created or the existing schema is modified. Thus "interpretation is a function of the high-level schemata employed during comprehension and recall, as well as the corresponding fit between the selected schemata and information to be learned and remembered". The processing of information using frames in Expert Systems in Artificial Intelligence is done on similar lines using the knowledge base programs for reading comprehension. Frames can be used as the equivalent of schemata as the building blocks of cognition. Here, prior knowledge has a great role to play.

Seminal work in the role of prior knowledge in comprehension done in the 1970s by Kintsch and van Dijk (1978), Minsky (1975), Rumelhart and Ortony (1977), Schallert and Goetz (1977); Anderson, Spiro and Anderson


(1978); Bransford and Johnson (1972) proved the useful and integral role prior knowledge plays in comprehending and remembering.

So we can come to the conclusion that a good reader must be linguistically aware and he must be able to use his linguistic awareness and his knowledge of the world to decode print and derive meaning. The act of decoding may be in the form of predicting, confirmation and correction or rejection of the prediction.

2.3 READING STRATEGIES

The process of reading consists of the readers' application of certain reading strategies to drive meaning from print. Studies in miscue analysis have shown that the reading process was the same for everyone and that the use of the three cuing systems for reading namely graphophonic, syntactic and semantic were universal.\(^{20}\) Despite the universality, the discrepancy in the proficiency level among readers may be attributed to the varying efficiency with which readers carry out the reading process. The differing levels of reading efficiency may be due to the differing reading strategies that readers employ.

It has been cited that the more the reader reviewed the reading process, the greater was the probability of coming up with an "optimal strategy for effective interaction".\(^{21}\) A general and common reading strategy that all readers use irrespective of the language in which they read

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can be described as follows. The reader scans the words to see whether his or her prediction matches the meaning of the words. If they do, there is closure and the reader supplies the meaning, generating comparing and scanning process to the next part of the text. When there is mismatch in the expected meaning and the meaning found in the text, the process of reading falters. The reader at this stage may come up with a strategy and search again, reading the revised meaning. Otherwise, he might give up attaching meaning to the text.

In the use of reading strategies, the ability to use the various types of textual constraints are related to competence level in the language. The competence level depends on the readers' metacognitive knowledge ie, "the stable, statable although sometimes incorrect knowledge that learners have acquired about language, learning and the language learning process." Learners use their intuition to formulate their own theories about the reading process basing it on their knowledge about their own learning abilities. Prior knowledge includes not only the learner's knowledge of language and the world as Goodman has proposed but the knowledge about their own learning competence as well. Clear distinctions have been made between 'poor' and 'good' reading strategies. The less competent readers used poor strategies like reproducing exactly the orthographic features of text words, relying on the bottom-up strategies for processing information, while the more proficient readers employed both graphic and contextual clues, besides using non-textual information or higher order schemata.


The gap between poor and good reading strategies can be bridged with reading practice and guidance from the teacher. Accepting that the reader uses the strategies of prediction, confirmation and correction as he develops his reading skill with experience, the role of the teacher's instructions are of paramount importance in the initial stages to provide practice in the learning-to-read process. The teacher's instructions must enable the reader to read according to sense groups rather than read word by word. The strategies for teaching should aim at the acquisition of rapid reading and the ability to adjust the speed according to the text and purpose. Besides being able to skim for the main idea and scan for specific kinds of information, reading critically should also be encouraged. Gradually the poor reader is bound to use his own intuition and reach the high proficiency level in reading. The cause of poor reading is lack of reading practice. With a persevering attitude and extensive reading practice any reader can improve his linguistic awareness. Practice can also bring about change in the attitude to reading. Findings have shown that unpracticed readers differed primarily from practiced readers in their ability to use the linguistic clues in the large context to determine meaning. They found it especially difficult to deduce word meaning from context, to understand lexical cohesion and to understand the meaning relationships between sentences. Students can be trained to become more aware of language and understand the clues it provides to derive meaning.

Before being able to achieve the higher order skills of reading like problem solving, reasoning to make inferences not explicitly stated in the text, understanding cause-effect relationships etc, teaching of certain important strategies are essential at the secondary school level. Learners

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24 Ibid, p.266.
are expected to know and use strategies for cognitive learning. Every reading subskill demands the use of certain strategies. For example, let us consider just two reading skills - guessing and deductive reasoning. (These two skills have been selected because they are the skills experimented with using ICALL programs described later in the thesis). Students can be trained to use the following strategies for guessing as suggested by Rubin (1989).\textsuperscript{25}

1. Use own language or second language to infer meaning.
2. Use knowledge about world, culture, communication process to infer meaning or predict outcomes.
3. Relate new information to physical actions.
4. Distinguish relevant from irrelevant clues for determining meaning.

Similarly, deductive reasoning demands the following strategies.

1. Infer grammatical rules or word formation by analogy.
2. Look for regularities and exception in grammar, word formation and phonology style.
3. Synthesized understanding of language system.
4. Use schema to grasp overall semantic intention.

In a classroom, two kinds of reading strategies are used - strategies that learners use based on their metacognitive knowledge and strategies that teachers use for training students. Two important pre-reading teaching strategies that teachers employ in classroom teaching to promote proficiency in reading are SQ3R and advance organizers.

SQ3R is a much venerated prereading strategy formulated by Robinson. In SQ3R, 'S' stands for 'survey' and involves glancing over the headings to find out the main points to be discussed 'Q' stands for question and requires the reader to turn every heading into the form of a question. The 3Rs are reading, reciting and reviewing. Searching for answer in the question is done by reading. Reciting involves thinking over the answer the reader has arrived at by looking away from the text. The review is done by reconstructing the whole process in the mind by once again going through the survey. As it involves multiple strategies it makes a very demanding task on the reader. It has been suggested by Niles that the SQ3R techniques can be introduced late in students' high school level to insure better independent application of the technique by mature students. Mastering the SQ3R techniques banks heavily on the students' ability to use cues in the text from beginning to end. This is considered a disadvantage for 3 reasons.

1. As the students have to rely solely on the cues in the text, the search becomes very text-based. It does not encourage the student to use his prior knowledge or develop a background knowledge for reading.

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2. If headings and subheadings are not logically organized to reflect key concepts in the text, then the purpose of survey and question may be defeated.

3. The students may be influenced by the author's perspective as they have to rely only on the cues in the text and may not develop alternate perspectives of a topic. It cannot be claimed that because the survey requires searching for cues in the text, background knowledge of the reader can not be developed. Though it must be agreed that poorly selected headings can impede the development of the survey and question techniques in reading, the usefulness of survey and questioning concept itself can not be denied. That the author's perspective will affect the development of critical reading is a weak argument.

Advance organizer is another prereading/preinstructional strategy proposed by Ausubel (1962). Its purpose is to "assist the reader in the mastery of forthcoming concepts by providing a framework or scaffolding prior to the reading assignment".29 To put it simply the meaningful learning of a reader is dependent upon the relatability of the reader's established cognitive structure to new concepts. The organizer is read in advance of the text to be learned. This provides the reader with a conceptual framework which

a) gives him a general overview of the major detailed material in advance of his actual confrontation with it and

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b) also provides organizing elements that are inclusive of and take into account most relevantly and efficiently the particular content contained in the material.30

Organizers vary for different pre-reading tasks. They depend on the nature of the learning material, the reader's age and the reader's prior familiarity with the given learning material.31 Hence it is difficult to be precise about the organizer's construction.

Other prereading strategies teachers use in classroom vary from group discussions to pretests as forms of assessment. For example, before embarking on the task of reading of a particular lesson, the teacher can organize a group discussion based on the theme of the lesson. Learner participation through group discussion and differing points of view by learners during the discussion can enrich the reading task that is to follow.

In order to gauge the reader's competence level, the teacher can also use pretests for assessment. This can be in the form of ICALL programs and they can be simultaneously used to record the learner's performance over a period of time and to search for common errors that a group of learners may make.

The principal aim of using reading strategies is to comprehend the text. When students read, their use of reading strategies depends on


1. their prior knowledge
2. the nature of the reading task
3. the result the teacher expects from the students
4. the result the students expect from the reading task

Effective reading strategies can be arrived at by the learners' reading practice and by training given by the teacher in the classroom.

2.4 READING AS A SKILLED BEHAVIOUR

"Reading is the process by which the child can, on the run, extract a sequence of cues from printed texts and relate these one to another, so that he understands the precise message of the text. The child continues to gain in this skill throughout his entire education, interpreting statements of ever increasing complexity".32

Psychologists believe that reading is a human behaviour and is to be considered a skill.33 In the educational context, reading skills is the term used often because skills in curriculum and instruction courses usually refer to mental or motor activities that are taught as part of the curriculum. In psychology, in contrast, the term skill is a label for a specific category of behaviour. There are many activities of reading that contribute to the behaviour of reading as a whole. This study concentrates on the development of certain reading activities which come under the wider umbrella of reading as a process. Hence, the use of the word reading skills in the title.

The hypothesis about the skill of reading is that it comprises a number of subskills, which can be differentiated and described. Therefore it is believed that it can be taught and tested. Brown and Hirst argue that this is an incorrect notion and offer two alternate theories - a "discrete skills approach" and a "holistic integrated approach". The discrete skills approach sees reading as the summation of micro-skills which can be taught and tested. The holistic integrated approach sees reading as an interaction between reader and text which cannot be usefully analyzed into 'x' number of skills without totally distorting what actually goes on in the reading act.34 The sum of the parts is grater than the whole when we divide the interaction between the reader and the text into 'x' number of skills. The discrete skills approach is more practical and adds support to the traditional teaching we have been following over the years in classrooms, that the reading processes can be divided into so many skills and can be taught in the classroom situation.

The different theories proposed by cognitive scientists are varied in their approach and no single principle acceptable to all exists. There are as many terms as there are theorists willing to classify reading skills. The earliest classification of reading skills into intensive reading and extensive reading was done by Palmer.35 Reading may also be classified into reading and studying (Higgins), interpretation and fluent reading (Kelly, 1969) etc.

Brumfit provides a more holistic classification by dividing reading into a skills and non-skills process. He divides reading skills into the

mechanical skills, the intellectual skills and the non-skills study according to the ability to respond to language beyond plain statement. Brumfit's classification of the reading process is reproduced in Fig.2.3. The mechanical skills can be divided into the ability to derive concepts from printed or written symbols, ability to read fast, ability to vary speed in accordance with reading aims and the ability to read aloud so as to achieve meaningful communication with one's listeners.

The intellectual skills comprise reading for exact information, reading for implied meaning, reading for gist, reading for required information and projective reading. The ability to read fast and the ability to vary speed according to the reading purpose is related to the intellectual skills.

The nonskills study or the ability to respond to language beyond plain statement includes a sensitivity to humour, irony, emotive language, the writer's philosophy, the writer's aims and sympathies and response leading to studies of a more literary nature. Reading for meaning and 'projective' reading are related to the non-skills study.

Independent of the plethora of terms that can be attributed to reading skills, the process of reading involves a combination of reading technique and reading comprehension. A skilled reader anticipates on the basis of his previous experience, responds automatically by automatisation and analyses the feedback that he gets from perceptual signals. Reading skills as a whole contribute to the reading technique as well as reading

37 John Potts, Beyond Initial Reading (London: George Allens Unwin Ltd, 1976) p.27.
THE MECHANICAL SKILLS

- Ability to derive concepts from printed or written symbols
- Ability to read fast
- Ability to vary speed in accordance with reading aims and needs
- Ability to read aloud so as to achieve meaningful communication with one's listeners

THE INTELLECTUAL SKILLS

- Reading for exact information
- Reading for implied meaning
- Reading for gist (i.e., ability to pick out essentials)
- Reading for required information
- "Projective" reading (i.e., projecting personal experience and previous knowledge into the reading matter)

NON-SKILLS STUDY

- Ability to respond to language beyond plain statement

Humour
Irony
Emotive language
The writer's philosophy
The writer's aims and sympathies
Response leading to studies of a more literary nature (e.g., style, imagery, plot, etc.)
comprehension. The reading techniques involve mechanical and mental skills.

While teaching reading comprehension as a skills activity at the secondary level in schools, it is essential for the language syllabus to concentrate on the mechanical skills and mental skills. The mechanical skills serve as a reading technique to assist the mental skills. The primary aim of tackling mental skills is to understand meaning. The mental skills involved in reading—location, identification, re-organization, interpretation, and evaluation loosely sum up the skills of comprehension.

The difficulties that readers encounter in their attempt to comprehend the text stem from two sources—from the reader himself and from the text.38

The major difficulties originating in the reader are as follows.

a) He does not know the linguistic system well enough
b) He reads too slowly

c) He cannot decode the rhetorical structure

d) He lacks motivation

The difficulties originating from the text are as follows.

a) Bad writing, either obscure or overloaded.
b) Text unsuitable for certain readers.

Reading as a skill is dependent on speaking skills to recognize that visual signs represent the language he knows as sounds. For this, previous experience of reading and linguistic competence are essential. Honing these abilities pave the way for competent individualized reading outside the classroom.

2.5 READING COMPREHENSION

Whether we read for pleasure or for information, the attempt is to read with understanding. By reading with understanding is meant extracting the required information from the written matter as efficiently as possible. Reading with understanding or reading comprehension can be categorized into:

1. global comprehension
2. local comprehension
3. referential comprehension
4. reorganization of information
5. the ability to draw inferences from stated facts
6. prediction
7. evaluative comprehension

Global comprehension enables the reader to get an overall view of the organization in a text. The reader is able to perceive the hierarchical relationships between plots and sub-plots, themes and sub-themes and understand their logical organization into paragraphs.

44. H.N.L. Sastri, Methods of Language Teaching PGCTE text, CIEFL, Hyderabad.
Local comprehension is the ability to locally identify and understand isolated pieces of information like facts or clues. This leads to the natural concomitant of making inferences from these facts. Local comprehension can be graded from locating the names of characters, places, events etc to comprehend the main theme of the text.

- locating names of characters, places, events
- identifying sequence of events
- determining cause-effect relationships
- comparing and contrasting
- identifying descriptions (of characters, events)
- main idea or theme

**Fig. 2.4**
Local Comprehension

Referential comprehension is the ability to recover specific information by referring to the different parts of the text. Referential comprehension varies from single factual comprehension which requires the reader to pick out information directly from a single place in the text, to a more complex referential comprehension which requires locating and
recovering information in bits dispersed over the full length of the text. The reader will have to link bits of information occurring in different parts of the text to answer a question like 'give a list of reasons for x'.

Reorganization of information differs from the higher form of referential comprehension as it requires the learner to rearrange or reorganize information that may not have been presented in a manner convenient to understand or easy to remember. The reader can reorganize information in the text by making notes for easier understanding. These notes can be in the form of classifying, categorizing and simultaneously summarizing.

Referential comprehension is the ability to draw inference from stated facts. Things not stated explicitly can be summarized by filling the gaps for information. Inferential comprehension is a higher level comprehension than factual or referential comprehension as it involves reasoning ability. A commonly held view among language teachers is that, the teaching of reasoning abilities does not come under the domain of language teaching. It is foolish however to overlook the importance of responding to linguistic stimulus. Readers should be sensitive to linguistic stimuli and always keep their eyes open for clues.

Prediction is the ability to predict what is likely to follow on the basis of what has been read. Inferential comprehension and organization of information play an important role in the skill of predicting as the reader has to look for clues as well as comprehend the logical organization of information.

Evaluative comprehension is the ability to judge the content of the text from the point of view of credibility, acceptability, authorial prejudices,
narrative style and literary criticism. The skill of evaluative comprehension improves with reading experience.

Efforts should be taken to train students in the acquisition of all types of comprehension. As this is not feasible in the limited time of classroom teaching, alternative sources using technology can be employed. This study suggests the arrangement of a parallel ICALL class to the conventional class for developing those reading skills that can be taught more effectively using the computer.

2.6 Methods of the Teaching of Reading

The practitioners of the reading method subscribed to the common view that the teaching of reading ranks uppermost in the language teaching priorities.

Michael West while teaching English in India in the 1920s, claimed that the emphasis of language teaching should be on the teaching of reading because it was most useful and the easiest of the four skills to learn. West prepared readers influenced by Thorndike's World Book. Significant change in language teaching methodologies in India came with the introduction of College Methodology as a subject at the Central Institute of English (CIE) in 1962, now Central Institute of English and Foreign Languages (CIEFL). This methodology developed at CIEFL advocated "a multiskill approach, but with emphasis on reading and writing, particularly reading. It stressed the need of the students for cultivating the abilities of independent reading and study including the use of reference techniques. Reading with attention and comprehension should be the main activity of the students".41 This

emphasis on reading in the language curriculum can be described as the Reading Method.

Early methods of the teaching of reading concentrated more on decoding print. The alphabetic method laid stress on letter recognition. The phonic method attempted recognition through sound. The whole word method concentrated on the shape of the word. The sentence method aimed at understanding the sentence as a whole. The Kinaesthetic method taught reading through touch. The Look say method required the combination of visual and oral skills. The phonic word method was a combination of the phonic and look say method and the linguistic approach suggested a holistic approach to the teaching of reading.

It is essential to decode print to understand the text but decoding is only one half of the reading process. The major flaw in all these methods was that they concentrated only on decoding print while reading and gave no importance to the other half of the reading process-deriving meaning and understanding.

Reading involves decoding to meaning and not decoding to sound. That the technique of reading was only one half of the reading process was confirmed when Chall divided teaching methods into the code emphasis and meaning emphasis thereby finding a clear cut division in the attitude of teachers and researchers to give more importance to either teaching children the meaningful communication aspect of the text or the technical aspects of reading.

The ultimate goal of the methods employed for teaching reading should be to enable the learner to read independently, rapidly and with understanding.

The principal feature of the Reading Method is that it restricts the goals of language teaching to training in reading comprehension. Stern cites West (1926), Bond (1953) and Coleman (1929) as providing contemporary arguments for the approach.\(^4^4\) West produced a series of course books, which he called New Method Readers. Coleman believed while teaching in American high schools that reading should take precedence over other skills. Bond developed a reading method at Chicago University for college language courses. The Reading Method came for criticism in America, when during the second world war, speaking English gained priority over reading. Stern states that the most important technique advocated in this method was vocabulary control and the difference between intensive reading and extensive reading. Stern affirms that "the reading method grew out of practical educational considerations, not from a shift in linguistic or psychological theory".\(^4^5\) The byproducts of the reading method were

1. deriving language learning techniques for specific purposes.
2. applying vocabulary control for better grading of texts.
3. creation of graded readers.
4. the introduction of rapid reading techniques because of the application of vocabulary control.


\(^{4^5}\) Ibid.
As the importance of understanding while mastering the techniques of reading (both mechanical and mental skills) gained ground, newer methods using technology came into use. Educational technology was considered primarily a tool for teaching.

The earliest method for teaching reading using technology was the audiolingual method using taperecorders. The earliest machine used for teaching phonetics was language master - a two track taperecorder. Teaching phonetics using language master was linked to acquiring reading proficiency. The child improved his reading ability by relating sound and words in print. The method involved showing a card containing a picture, letter or word as he heard a particular sound. The child was required to run the card through the machine till he had achieved proficiency in that particular task. It also helped the teacher to rate the performance of the learner by playing the tape back.

Taperecorders are widely used in classroom teaching today. Tapes for teaching vary from training in linguistics (for example, phonic drills) to literature like (for example, Shakespeare plays). A taperecorder can be used for individual work and for improving listening skills as group work. This can also serve as a tool for remedial teaching. Like all audio-visual equipment the taped reading program can be teacher-designed to cater to the particular needs of students.

Under the supervision of D.H.Scott of Bristol University, experiments began to be conducted to prepare material for programmed reading in 1954\(^{46}\). The programmed reading kit prepared for the teaching of phonic skills could be played individually or in groups. The material was

so designed that when the child went wrong he could correct himself and then move to the next stage. This challenge of doing things right and progressing to the next stage was novel.

Personalized System of Instruction (PSI) was another technique to be considered under programmed learning. It was introduced by Keller in 1968. The PSI was very similar in principle to programmed instruction and has direct implications for the issue of influencing a reader's task-compliance motivation.

Based on the principle of programmed instruction, the teaching machine was first devised in 1953. All teaching machines derive from Pressey's teaching machine. The machine had the advantage of providing individualized instruction at the learners' own pace. In later years, the use of teaching machines through programmed reading increased. The advantage was in providing knowledge in a graded fashion. The aids used for programmed reading ranged from taperecorders and workbooks to films and computers. The concept of programmed instruction and its contribution to computer assisted language learning has been detailed in chapter four.


The entry of computers as teaching tools led to a fundamental contradiction between the computer and the audiolingual methods of teaching. The practitioners of the audiolingual method believed that language is primarily speaking and listening and thought that reading and writing are secondary skills. It was also believed that the teaching of reading and writing can be postponed. Language teaching using the computer on the other hand, concentrated on reading and writing (till the invention of talking computers). Cook affirms that though the audiolingual model has survived implicitly in many classrooms, explicitly it has been superseded by the cognitive-code model of CALL. The computer drills cannot be said to have arrived from the drills of the audio-lingual method as the audio-lingual method is based on Behaviourist precepts while CALL has a more cognitive approach. It is possible for the computer to analyse the mistakes of the learners without merely stating whether his response is right or wrong. The audio-lingual method lays stress on practice. The cognitive learning through computers lays stress on a conscious awareness of learning and appreciates the learner's ability to learn by making mistakes. Though ordinary CALL programs also enable the learners to learn from rules, CALL programs based on AI use the cognitive method more convincingly by being more rule based, providing options to the learner and giving an explanatory feedback.

Another method of teaching that CALL relies on is the communicative method. With its ability to process natural language, artificial intelligence programs using simulations have great potential for the teaching of reading using the communicative method.

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2.7 THE ROLE OF ICALL IN DEVELOPING READING SKILLS

In the Indian curriculum, very little time and resource is devoted to reading. When a lesson is done in class, the teacher explains the lesson. In all probability, the teacher uses the lecture method. (The communicative teaching method is yet to be implemented on a full fledged basis). At the end of the lesson, the students are asked to learn the answers to the questions and their understanding of the lesson tested. At no time during the learning of the lesson do the students really read the lesson.

The most important objective of teaching reading is to make learners read and enjoy the experience and motivate them to do more of the same activity. If the computer can even merely evince an interest in reading in the learner, half the job of motivation can be said to have done. "We need to step back for a moment and consider its (computer's) role in the reading/language arts classroom. Let us not ask ourselves. What can the computer do for the teaching of reading? Instead let us pose the question, "What should the computer do?"51

To develop reading skills, individual instruction and increased practice opportunities are desirable. The computer is the most used tool for providing instructional strategies and individualizing instruction.52 The computer's potential for practice facility is unmatched.


The computer's advantage in improving learning performance in general and reading in particular has been shown by Holbrook (1976), Macken and Suppes (1976), Crandall (1976) etc.\textsuperscript{53} Saracho's study in 1982 showed that those students who used CAI performed better on language, reading and mathematics than did those students who did not use the CAI program.\textsuperscript{54}

An ICALL-supported ELT curriculum provides greater opportunities for skill building. ICALL programs for building reading skills can be modelled on a three way approach-descriptive instructions with examples, testing learning using simulations and following it up with reinforcement through immediate feedback. Technologically, Artificial Intelligence is most suitable for creating simulations and providing a congenial learning atmosphere. A simulation is a representation of a process which allows the learner to intervene and change values therefore affecting the undergoing process in the program. Presenting a reading problem using simulations in branching stories is a typical CALL program for improving reading skills.

\textsuperscript{53} J.I. Holbrook, \textit{An Analysis of Achievement in Mathematics and Reading is the Freeport Public Schools During the period 1970-1975} (1976).


For example, Mario Rinrolucri's ACTION MAZES involves students working in small groups with a text that presents a problem. The students have the choice of working with many options to reach a satisfactory result. This helps learners in learning the consequences of decision making. ADVENTURE is another simulation program whose purpose is 'reading for meaning' by exploring a maze. It has a fantasy setting with princesses, goblins, dragons and monsters. The student is to key in short commands. The interest in the game owes to finding out to what vocabulary the machine responds to. Later versions of ADVENTURE tried to incorporate an advanced language interpreter that is closer to natural language. The advantage is that the learner is attracted by the idea of playing a game and he simultaneously involves himself in a reading-for-meaning skill based activity.

The computer as demonstrator is another useful instructional technique for promoting reading. The demonstration can bank on visual presentation in the form of graphics or animation, and can be student controlled so that he can recall it at will and practice a particular skill. GRAMMARLAND is one such program which is based on Winograd's SHRDLU. The student can have an interactive discourse with the machine by way of question and answer and request a demonstration. The demonstration mode can be suitably modified for training in any reading skills.


Vocabulary acquisition is an integral part of developing the reading skill. A valuable contribution to vocabulary acquisition using ICALL is through strategy games and tutorials using drills. A knowledgeable database giving explanations when the learner makes a mistake, gradually increasing the difficulty level with regard to vocabulary and speed can be prepared. Because students exhibit different learning behaviours, the drill and practice can be machine controlled or student controlled giving the choice of the type of learning to the student. As the method uses a good deal of training, it has the merit of being reassuring for the student. The students know what is expected of them and thus do not feel threatened in contrast to an open-ended activity. Many vocabulary games ask the user to guess the letter by giving the length of the word. A slightly more complex game strategy is to pit the learner and the computer against each other by making each of them score the other's guesses depending on the length of the string. The PROLOG program has such vocabulary games in its Examples files. Programs that have been designed on these lines include WORD MASTERMIND and ZX-HIT.

AI based CALL materials have the ability to be structured in such a way that they can grow rapidly by simple addition of information to the database. This also facilitates flexibility in learning according to learner abilities. In a way, students can direct their own learning.

Computers have a great advantage when it comes to reading over the linear fixed presentation of a book. "Unlike a book, it can present fragments which add up to a whole... can combine visual or graphic information with text, it can highlight features of the text".58

JOHN AND MARY is a program devised by Higgins and Johns where the student can see how a sentence relates to the limited world depicted on the screen 59. Thus processing of pragmatic meaning for reading using computers have also been developed.

ICALL can be used to train learners in both the mechanical and mental skills of reading. How effectively it can be done using AI is yet to be explored. This study shows how (1) AI can be exploited for teaching mechanical skills using drill by providing maximum practice opportunity and (2) how AI can be employed for learning the higher order reading skill of problem solving and inferring by providing options.

Some guidelines for using computers for teaching reading are enumerated below:

1. ICALL programs designed for reading should be able to communicate intelligently.
2. The preparation of ICALL material should focus on meaning while reading from context.
3. ICALL programs should make the learners think
4. ICALL programs should concentrate on developing higher order reading skills.
5. ICALL programs for reading should be linked to writing. For example, reading a passage and then note-taking.

A model of microcomputers and reading as visualized by Balajthy\textsuperscript{60} is given in Fig.2.5.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure2.5.png}
\caption{Balajthy's model of microcomputers and reading}
\end{figure}

The figure is illustrative of the fact that computers have a multidimensional role to play in the teaching of reading. As an instructional device it can be used as tutee and for programming. Computers can be used to teach a holistic reading activity or a subskill through drill and practice or can act as an efficient tutorial program or for providing instructions in content areas. Computers can also be used for diagnosis, adjunct readings,

\textsuperscript{60} E.Balajthy, Microcomputers in reading and language arts (New Jersey : Prentice Hall) p.11.
word games, documentation, information retrieval. Interaction is a very useful and important activity that computers can perform to the advantage of teaching using CALT programs. In teaching attempts to link reading to writing, CALL programs for reading and then writing poetry or short stories can be used. The computer is a potential and powerful teaching utility that can assist the teacher and the learner in a plethora of reading related activities.

For a computer to be able to perform all the activities necessary for reading described in the diagram above, intelligence has to be provided to it. And to provide intelligence to the computer, there is no better way than employing the techniques of Artificial Intelligence. This is taken up for study in the next chapter.