Schema in Learning

G. Manjulatha Devi, Ph.D. Candidate

Reminiscences

An individual is a bundle of experiences and each experience is a consequence of his meticulous observation and careful imitation of surroundings. His past experiences, which are stored in his memory, which are also known as his knowledge, are useful to him to respond appropriately to a situation. There is no tomorrow without today. The logic is that future collects and preserves what present leaves. Every new experience manifests some resemblance with the old. So the amount of knowledge that an individual has stored is measured against the quality of his experiences considering which his abilities or readiness to learn new things are estimated.

On describing Schema

Human beings are able to comprehend and predict the situations of the world because the acquisition of the knowledge, gained out of past experiences, activates their brain to respond and surmise appropriately to subsequent occasions. This storage is known as schema. According to Rhumalhurt schema is:

> A schema is a data structure for representing the generic concepts stored in memory. There are schemata representing our knowledge about all concepts; those underlying objects, situations, events, actions, schema contains, as part of its specifications. (Rumerlhart and Brandford,1980:80)

Varying Nature of the Schemata

The nature of these schemata is different from individual to individual and situation to situation. According to Cook (1997:86) the concept of schema is " a mental representation of a typical instance which helps people to make sense of the world more quickly because people assimilate new experiences by activating relevant schema in their mind." The world offers an individual multitude of experiences of assorted varieties, which he carefully organizes categorically in his mind map, and consequently, his mental picture contains sceneries of varied importance and beauty.

Information Processing

New information is processed when it is similar with already existing information stored in individual's memory. So, obviously there is relation between incoming information and previously known information. For example an individual has the knowledge that s/he has to buy a ticket at the counter to enter the hall, after that search for the seat to sit on. This is because the individual has the experience of buying a ticket earlier. S/he knows that there are separate counters for ladies and gents.

In a particular theatre, if both are standing in the same queue, s/he feels confused. So an entry of any new information that is different from the existing schema into the brain of an individual results in chaos and evidently he begins to manifest in his behavior eligibility to be subscribed as blame-worthy. This is the reason why readers have difficult time comprehending the text they are not familiar with, despite comprehending the individual words in it.

> Reading is a selective process. It involves partial use of available minimal cues selected from perceptual input on the basis of the reader's expectation. As this partial information is processed, tentative decisions are made to be confirmed, rejected or refined as reading progresses. (Goodman, 1970, p.260)

Communication of Information

Communication of information from one to another is an endless process and the messages modify themselves in their form and content while being communicated. It is for the reason that individuals naturally use their comprehension to process a message to avoid the laborious task of 'Information Retention.' This interaction is not necessarily between person and person, it may be between text and reader. The teacher often encounters a marked difference in conveyance of knowledge by the learner, because students never utter the verbatim of the teacher or the text. They have remembered what they have read by actively constructing a meaningful representation of it in their memory.

Not only by students but by every other individual also such an activity of understanding a concept is revealed in self-constructed sentence structures. We find people conveying what we

have told them in their self-made sentences but not repeating ours. So schemata are important not just in interpreting but also in decoding how the information is presented.

The theory is a revelation of the fact that the process of reading is an interaction between the reader and the text. The impact that schema theory has on language teaching is real. Since the late 1960, as stated by Khemlani and Lynne (2000) a number of theorists have developed many interactive theories of reading which attribute a significant role to a reader and the knowledge they utilize to bear with the text in reading process. These interactive theories strongly influence teaching practice in which schema theory is highlighted.

Schema Theory of Learning

Learning is gaining information. The amount of learning is estimated by the amount of input of information .It is not, therefore, restricted to any specific type, but encompasses all types, both behaviours and attitudes. So, schema theory, contrary to other learning theories of behaviourism or cognitive dissonance, elucidates the acquisition of any type of knowledge and the instructional strategies based on it can be applied to any learning situation. The effectiveness of the theory in learning is overt as it explains how different types of knowledge is learned and suggests open instructional strategies to the educators to apply for the acquisition of new knowledge.

New Learning generates from old learning. For example, the teacher who aims at teaching a new item does something as pre-activity and this is how s/he helps students to recall their past learning. Learners apply their prior knowledge to predict the present situation. When the teacher gives sentence in which the word 'apprehension' is used as 'the apprehension of corrupt officer was made by the police yesterday.' The students peep into their memory and with the help of schema stored in it, they identify the link between police and corrupt officer and primarily recollect the word 'arrest' and later confirm the meaning of apprehension as arrest.

Individuals undergo numerous experiences. Students make use of the multiple schema-building experiences that would help them develop fresh problem-solving schemas and those schemas help them solve unfamiliar problems successfully. Therefore "instructors and instructional designers should assume that problem-solving ability is culminative not only overtime but over numerous experiences."(Price and Driscoll, 1997)

The research of Price and Driscoll (1997) as the study of student problem-solving in familiar and unfamiliar context suggests that schema theory is a valid metaphor for explaining student's knowledge structures and ability to recall information. While reading students recall their background knowledge and making use of it they understand the present text. Their background knowledge of vocabulary and syntax or any other experience start working actively and would help them predict the solutions for problems they finds in the text in the present situation. So to activate their past knowledge, it is any time better for the teacher to keep them engaged in reading. Their frequent meetings with the same word that can bear different synonyms and the way grammar is used by the writer in the text will print the knowledge of words and also the rules of grammar to construct proper sentences on the minds of students and they never feel frightened of communicating in a second language. Armbruster (1996, as quoted by Driscoll)

states that it is a wise strategy for teachers to adopt certain techniques to motivate students to contemplate existing schema and to help them make connections between existing schema and new information.

Three Modes of Learning

According to schema theorists there are three modes of learning:

Accretion: It is an addition of new input to already existing schema. The existing schema is unaltered. The learners, for example, while learning about new item that verbs with third person singular (he,she,it) take extra letters s,es,ies (Ex: drinks,goes,flies.) in simple present tense just add this new learning to their existing schemata of present tense. They already know that in present tense verb is in first form and it indicates incomplete actions. This new knowledge of adding suffixes to verb is simply added to what they already know.

Tuning: It is necessary alteration in the existing schema. This generally happens when the learners find themselves insufficient in possessing schema for the new knowledge and, therefore, modify existing schema. For example learners have the knowledge that simple present tense is used to state actions of permanence, repeated or habitual actions. When they are taught that it also used to state future actions, they modify their existing knowledge that there are no special verbs used to state future actions, and present tense is used to describe future actions and, therefore, in present and future tense verb is in first form only.

Restructuring: It is creating new schema by modeling. New schema created by modeling can be described as learning by analogy. For example, Students without having an existing schema for the concept of transformation of sentences from simple to complex and compound may learn about the concept of it by modeling new schema. They first form two sentences in present tense. They make use of their prior knowledge and form correct sentences. They feel immense strain to join these sentences with link words which is very unfamiliar to them.

Instructional Strategies According to Schema Theory

Schema theory suggests that the most important instructional strategy is activating the prior knowledge. The teacher has to go by several effective methods, implement useful techniques, and most importantly, plan appropriately before communicating new knowledge to students to stimulate their existing knowledge. This strategy, as prior to actual process of sending new information, is found tremendously working in teaching. Motivation for this reason is the first step in teaching and it facilitates the difficulties in learning, if done effectively.

The schema theory acknowledges the role of cognition in learning process and also states that the capacity of retention and recollection of the information are the deciding factors to confirm whether or not new information can be processed. Therefore many teachers advocate metacognitive strategies to teach learners.

For example, the teacher taught auxiliary verbs in the last class. The next day the teacher asks some questions on what was taught and learnt yesterday. This is to know how much the students are able to retain in their brains to learn a new item.

The responses of students reveal their retention ability and based on it the teacher either repeats the explanation by following an alternative method or discusses a new topic. Students may be given homework so that they read again what they have learnt in school or college that day. The text provides guidance for readers to construct meaning from their previously acquired knowledge. How the readers recognize information and how they store it are influenced by schemata.

Developing Independent Readers

Carrel (1983:569) claims that "one of the objectives of teachers is to develop independent readers outside the EFL/ESL classroom, readers whose purpose in learning to read in English as a foreign or second language is to learn from the text they read."

A reader is not the one who is forced to read but the one who has innate interest to read. The text is just an external factor that can tantalize the learners to read when it is designed pampering the tastes, compulsions, emotions and demands of the learners. It draws the attention of the learners with qualities like

> ➢ The size
> ➢ The amount of interest it can create in readers
> ➢ The complexity
> ➢ The kind of information it contains
> ➢ The credulity
> ➢ The coherence
> ➢ The presentation

In a word, the nature of the text will influence the reader's response to it. There is a belief that has existed for some time is that students who cannot read well in their first language will exhibit the same inability to read in a second or foreign language. From this belief emerged a serious pedagogical approach in teaching students reading strategies in their first as well as second language at the expense of the imparting of the second language linguistic knowledge as exemplified in Celani et al (1988) about Braazilian ESP project.

Achieving Comprehension

To achieve comprehension. readers select the most appropriate schemata for making sense of the incoming information. The reason why many learners show off-hand attitude to reading is, it is a tough battle where learners feel beset by numerous enemies like linguistic knowledge, vocabulary, grammar, message, ambiguity etc which spoil their understanding. Their determined effort with these challenges will finally lead to their comprehension of the

text. It is never easy but a consistent practice and training will allocate ability to learners to obviate the reading obstacles.

Rumerlhart and Brandford (1980:1985) studies of content schemata show that readers need knowledge about content of the context to be able to understand it. Such knowledge need not be available; it needs to be activated by the text or by the reader, if it is used to facilitate understanding.

For example students do not have the knowledge that 'not either' mean 'also not' When they read sentences like:

- Avyaya does not like mangoes. Madhurima does not like mangoes either.
- What! You do not go for a morning walk.I do not go either.
- Your brother cannot speak French. My sister cannot speak either.
- I am not rich. My friend is not either.

Their knowledge is activated and that will facilitate their understanding. They learn how to use 'either' to mean 'also not.' They also realize that the prior statement is a negative sentence and so 'not either' is used only with negative sentences.

  The studies show that their reading performance can improve as a result of training. Hence the teachers have to provide such texts for reading as are helpful to improve the reading skill of lear

Schema Theory Based Pre-reading Tasks

According to Chastain (1988) the purpose of pre-reading activities is to motivate the students to want to read the assignment and to prepare them to be able to read it. Generally teachers are found giving the assignment to students because they assume that the students are already familiar with the vocabulary and grammar in the text and, therefore, ably perform the task. The teachers cannot take for granted that the students have the ability to encounter the complexities of the text. In such an approach to reading pre-reading activities which include word definition, and explaining syntax help the students to understand the complex structures of the text.

According to Ringler and Weber (1984) pre-reading activities are the enabling activities, because they provide the reader with necessary background to comprehend the material. Reading is an active process. It involves interaction between reader and writer mediated through the text. So reading on the other hand means discoursing with the writer. The text provides information, ideas and beliefs which need not be necessarily approved or appreciated by the readers. When they find their opinions contradictory to what they read in the text, they cannot easily accept this alienation.

Pre-viewing Strategies

Anerbach and Paxton (1997:259) suggest the following pre-viewing strategies.

➢ Accessing the prior knowledge
➢ Writing about your experience related to the topic
➢ Asking questions based on the title
➢ Semantic mapping
➢ Making predictions based on previewing
➢ Identifying the text structure
➢ Skimming for general ideas
➢ Reading the introduction and conclusion
➢ Writing a summary of the article

According to Chia (2001) the aim of previewing is to help readers make some educated guess about what is in the text and thus activate processing for reading comprehension.

Guidance

To make more specific predictions, students obviously need more guidance. The teacher should offer following guidelines.

➢ Ask the students to read the title of the text, whether they know anything about the subject.
➢ Ask them to read the first sentence of each paragraph. This is to know whether they can predict what the remaining part of the text will contain.

➢ Ask the students to read the last paragraph which often reveals the conclusion of the author, have the students discuss how the author organizes the information to prevent his point of view

Questioning

Students can learn more effectively when they generate their own questions, summarize and exert choice in the lesson than when they do not. Students should be told to summarize or paraphrase after each paragraph or important section. This will help them recollect the main ideas, arrange them in order and enter them in their long-turn memory. The feedback given by the teacher will help them look out for errors in their comprehension next time.

Three-phase approach (pre-reading, while reading and post-reading) gives an interesting approach to reading. The approach begins by introducing the topic to students. Once the topic is presented the students are asked to work in groups and write a list of two columns, column of familiar things and column of unfamiliar things. They can discuss with other groups to know the familiarity or unfamiliarity of the text they are going to read. Most of their doubts can be

clarified by interactions. More over they feel comfortable to discuss openly with their friends which they cannot with their teachers.

Using Diagrams

Diagrams are supporting teaching aids which give a concrete shape to abstract ideas. Students are beguiled to muse at the figures and begin to think of the obscure as the visual diagrams bring the thought in form before their eyes which they feel happy to realize. Diagrams are crucial for organization of ideas and supporting information prior to writing essays. Graphic organizers may provide structure for taking notes from text books. In addition, they allow scaffolding for visual learners, second language learners and students with language proficiency deficits, so they can better integrate vocabulary into background language. (Armbruster and Anderson 1984, 1991; Cook, 1997; Pruisner,1995)

Figures, charts, graphs and diagrams will create thinking ability in students. This will also alleviate the burden of the teacher. Students when look at the pictures will develop ideas which give them insight into the matter. Teacher's explanation of a thing will be one-sided. When students are given lee-way to think in their own way they have admirable chances to exchange their ideas. This will make them have an access to others mind where they study what others are thinking about a particular thing. The teacher will also understand the thinking level of the students to think introspectively to implement further strategies and methods for betterment.

Semantic Mapping

One popular kind of pre-reading task is 'Brain storming' according to Wallace (1992) The teacher gives a key word or key concept. The students are then invited to call out words or concepts they personally associate with. This strategy as a pre-reading activity is more advantageous because it will reduce the burden of the teacher of giving illustration to everything in the text. Instead of from the teacher the students learn from each other. This acquisition of learning is more delightful for them.

For example the teacher gives the keyword phonetics which has association with "pronunciation," "stress," "intonation," "syllabic division." However the initial random pronunciation can be clarified and sub-categorized either with the teacher or by the students and additional confirmation from the teacher will stretch the existing concepts. This kind of activity resembles what has been called Semantic Mapping.

Schema Theory in Intensive Reading

Intensive reading is generally at a lower speed and the reader who desires to follow this strategy, requires to have a higher degree of understanding to develop and refine word a study skills, enlarge passive vocabulary reinforced skills related to sentence structure, increase active vocabulary, distinguish among supportive and non-supportive details and provide socio-cultural insights. In intensive reading, the reader is an active participant, making predictions processing information. Intensive readers thus recognize not only what the text says but also how the text

portrays that subject matter, and this is how it helps them validate the theory that each text is a unique creation of a unique author. Insuperable barriers like concentration, memory and language processing beset the readers in intensive reading process where the readers' prior knowledge and purpose of reading and language proficiency carry him through the task.

In traditional English teaching, the students were taught the meanings of words, phrases, idioms and sentences, most frequently in the L_1 of students. In reading, students were supposed to understand the meanings of language constituents in lieu of overall meaning of a text. In modern English teaching and learning programme, the general understanding of the text is becoming more important.

According to Goodman (1971), reading is a "psychological guessing game." He further states that in the reading programme, the reader reconstructs, as best as he can, a message which has been encoded by a writer as a graphic display. Schema theory explains that a text only provides directions for listeners and readers as how they should retrieve or construct meaning of their own and this is their acquired knowledge. This previously acquired knowledge is called the readers' background knowledge.

Comprehension of the text requires the readers' ability to relate the textual material to one's own knowledge. "Every act of comprehension involves one's knowledge of the world." (Anderson et al 1977) The individuals through perceptions and understanding of the world form a theory in the light of which they interpret their interactions with the world, hence, obviously the more knowledge of the world the readers have, the better comprehension they get about the text.

During the reading process the readers bring information, knowledge, experience, emotions and culture to the printed word and make decisions about something. To help the students understand the global meaning of the text, the teacher should teach the students to link their prior knowledge with the text.

Conclusion

It is important for the teacher to activate the prior knowledge of students by conducting pre-reading activities. They will help them recollect their past knowledge which would be useful in comprehending the present text thoroughly.

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G. Manjulatha Devi, Ph.D. Candidate
Kakatiya University
Warangal
Andhra Pradesh, India
gmanjulatha@gmail.com