

## Chapter Two

### REVIEW OF LITERATURE

This chapter gives a brief history of research in the area of ambiguity detection and of student-generated questions in reading or prose learning. The next section situates student-generated questions in the area of metacognition and looks at ways in which metacognitive activity has been studied. This is followed by studies that point to the value of student-generated questions and a discussion of the issue of whether instructing students to ask questions has actually succeeded in enhancing prose processing. The sections that follow deal with teacher support of student questioning followed by a look at student questioning in high school classrooms in the US, involving native speakers and non-native speakers.

#### **2.1 Ambiguity detection in children**

Much of the research in the 1960's in the area of ambiguity detection has been related to the psychological development of a child from egocentric to socialised speech and thinking (referring to Piaget's stages of development) or from social to individualised stages referring to Vygotsky's (1962) explanation. Experiments were done on 5 year-old children and in the area of ambiguity detection in connection with referential communication. Typically these experiments used pictures or blocks that A had to describe and B to identify and assemble. These

were finite, tangible tasks in the sense that the thing referred to had a physical form unlike reading comprehension which deals with abstractions.

Their findings were that kindergartners could not find out the cause of the ambiguity, did not compare the message and the referent and lacked social experience, that is, they did not see the need to give the speaker feedback about the inadequacy of the information and were thus unable to resolve their own ambiguities.

But older children of 10 to 12 years could by and large resolve their own ambiguities through further questioning. If they failed to do so it was because they failed to detect the reason for the ambiguity. There were two parts to the resolution: ambiguity detection and questioning which was thought of as a social skill. (Fry, 1966; Cohen & Klein, 1968; Krauss & Glucksberg, 1969; Asher, 1976; Cosgrove & Patterson, 1977; Cohen, 1982; Pickert, 1981; Patterson, Massad & Cosgrove, 1978).

Virtually nothing was done in the area of ambiguity detection in reading comprehension or student questioning in the 1960's. For a long time research in questioning tended to focus on teacher-generated or author-generated questions. Where researchers looked at pupil-constructed questions it was mostly in the area of problem solving behaviour. Not till the 70's was there any interest in student-

generated questions in the context of reading or prose learning (Andre & Anderson, 1978).

## **2.2 Student-generated questions in reading or prose learning**

Educators such as Bernstein, 1973; Dansereau, et al., 1974; Frase & Swartz, 1975 (in Andre & Anderson, 1978) and Smith, 1972, stressed that students should be encouraged to ask their own questions in order to develop as independent readers. With Durkin's benchmark study (1978-1979) researchers began to think of reading not as merely decoding print but as an interactive skill. Comprehending was no longer equated with reading but with thinking. That was a significant turn in the direction of research because it drew attention to what goes on in the minds of the reader as he reads. There has since been a growing interest in critical thinking and in metacognition in reading. Metacognition refers to the knowledge and control people have over their own thinking and learning activities (Flavell 1979, in Wilen & Phillips, 1998).

## **2.3 Student -questioning: a metacognitive activity**

Wilen and Phillips (1995, p.135) describe two components of the metacognitive process: awareness and action:

Awareness of one's cognitive behaviour during a task includes awareness of the purpose of the assignment, awareness of what is known about the task, awareness of what needs to be known and awareness of the strategies and skills that facilitate or impede

understanding. Action is the ability to use self-regulatory mechanism or cognitive monitoring to ensure the successful completion of the task....However this metacognitive skill is apparently not developed in all students. To be an efficient and effective thinker, the learner should be able to monitor his or her degree of understanding, be aware of the knowledge possessed, be conscious of the task demanded and know the strategies that facilitate thinking.

Some of the metacognitive skills involved in reading according to Baker and Brown (1984) are: a) clarifying the purposes of reading, that is, understanding both the explicit and implicit task demands; b) identifying the important aspects of a message; c) focusing attention on the major content rather than trivia; d) monitoring ongoing activities to determine whether comprehension is occurring; e) engaging in self-questioning to determine whether goals are being achieved; and f) taking corrective action when failures in comprehension are detected.

Baker & Brown (1984) collate three main types of comprehension failures: a) the appropriate schemata are not available; that is, the reader does not have enough knowledge about the topic to impose an interpretation upon the text; b) the appropriate schemata are available, but the author has not provided enough clues to suggest them; that is, the author is at fault in not conveying his or her ideas clearly enough; c) the reader finds a consistent interpretation of the text, but not



the one the author intended; that is the reader "understands" the text but misunderstands the author. Readers who understand incorrectly have much the same feeling as those who understand incorrectly.

Baker & Brown (1984) point out that although mature readers typically engage in comprehension monitoring, it is not often or even usually a conscious experience.

They distinguish between an automatic and a debugging state.

The skilled reader is one who can be characterized as operating with a lazy processor. All her top-down and bottom-up skills ... are so fluent that she can proceed merrily on automatic pilot, until a triggering event alerts her to a comprehension failure. ...One commonly experienced triggering event is the realization that an expectation we have been entertaining about the text is not to be confirmed. Another triggering situation is when we encounter unfamiliar concepts too often for us to remain tolerant of our ignorance. Whatever the exact nature of the triggering event, we react to it by slowing down our rate of processing, allocating time and effort to the task of clearing up the comprehension failure. And in the process of disambiguation and clarification, we enter a deliberate, planful, strategic state that is quite distinct from the automatic pilot state...p.356)

Realising that one has failed to understand is only a part of comprehension monitoring; one must also know what to do when comprehension failures occur. If the reader decides to take strategic action, a number of options are available. He or she may store the confusion in memory as a pending question (Anderson, 1980) in the hope that the author will soon provide clarification. Or the reader may decide to take action immediately, which may involve rereading, jumping ahead in the text, or consulting a dictionary or knowledgeable person (Baker and Brown, 1984). Anderson & Anderson (1978) propose the use of self-questioning strategies as it leads the reader to an active monitoring of the learning activity.

It is assumed that poor readers are deficient in these skills and strategies. It might be added that for successful monitoring of one's comprehension one must have not only the skills and strategies but also what Eskey & Grabe (1988, p.231) call "a critical mass" of knowledge referring to linguistic knowledge, background knowledge and knowledge of relevant formal and content schemata. The poor reader's performance may be compared to that of a novice at computers, sitting before a computer screen unable to make headway. Both are characterized by "a lack of attention to relevant dimensions and a lack of task-appropriate strategies." (Baker & Brown, 1984, p. 358).

A particularly important point to remember when looking at the affective construct of ESL students is that "learners of any age are more likely to take active control of their own cognitive endeavours when they are faced with tasks of

intermediate difficulty (since if the task is too easy, they need not bother, if the task is too hard, they give up.)" (Baker & Brown, 1984, p.354).

Examples of questions of clarification or disambiguation are:

- a. What is the main point?
- b. What does this mean?
- c. How would this apply in real life?
- d. What would be an example?
- e. How does this relate to that?
- f. What does this assume?
- g. What is the effect of that?
- h. Why?

### **2.3.1 Studying metacognitive activity**

The problem with studying a student's metacognitive activity is that of discovering the student's thoughts especially as the student is sometimes unaware of his own thought processes. Several methods have been used by researchers. Baker and Brown (1984, p.362) list the following:

- a) ratings of felt understanding. This is a way of assessing feelings of understanding by asking people to rate their certainty that they have answered a comprehension question correctly or incorrectly. Readers are considered good comprehension monitors if they indicate that they are sure their answers are correct when in fact they are or if they indicate their answers are wrong when the

answers are indeed incorrect. On the other hand, readers are considered poor comprehension monitors if there is a mismatch between their confidence ratings and the correctness of their answers. One limitation of this technique is that it tests one's ability to judge the correctness of an answer given after reading, rather than during reading.

b) Self-corrections during oral reading. Several studies of oral reading have revealed differences between good and poor readers both in the types of errors made and in the likelihood of spontaneous corrections.

c) Comprehension monitoring measured by the cloze technique. However, the demands of the cloze test are quite different from those of a typical reading situation in that the failure to use a strategy of looking ahead required in a cloze test may not extend to normal reading.

d) On-line measures of processing during reading. These measures include eye movements, eye-voice span and reading times. This is one of the best sources of information about processing behaviours. Unfortunately studies which have obtained on-line measures of reading behaviour have not assessed comprehension and comprehension studies have not obtained processing measures.

e) Self-reports during reading. Are readers aware of using particular strategies as they read? Do they consciously modify their reading strategies in response to changes in task demands? Some researchers have attempted to answer such questions by asking readers to comment on their thoughts and behaviours while they are engaged in reading. Baker and Brown (1984) caution against conclusions concerning what a reader knows and can do when reading, saying that researchers should not rely exclusively on self-report techniques of the kind favoured in interview studies. They advocate obtaining convergent evidence.

Although this study relies heavily on interviews with students, attempts have been made to triangulate information obtained in the interviews with students, with data obtained from interviews with the lecturers, observation of a lecture and a tutorial and an examination of the students' textbooks. Furthermore, a primary question in the interviews was whether the student felt that he understood. This was taken at face value. Whether the student felt he understood when in fact he did not was not pertinent to the study.

### **2.3.2 The value of question-generation**

What is the value of question-generation? Andre and Anderson (1978) tried to determine whether or not generating good comprehension questions while studying prose material was an effective study technique. They found, on doing a multiple regression analysis that the percentage of good comprehension questions

was a significant predictor of achievement for students trained in questioning techniques and untrained students. Training helped. The student is forced to pause frequently, deal with an 'understanding question' and determine whether or not she has understood and then decide what strategic action to take next. Trained students generated a significantly greater percentage of good questions than the untrained group. They also found that question-generating strategy affects low verbal ability students more than high verbal ability students because good students do it anyway.

Poor readers lack awareness of their own thought processes and of intervention strategies (Fitzerald, 1983). Poor readers do not know when they know and when they do not; they do not know what they know and what they do not and they do not know what they need to know ie they are unable to list required information. They also do not gain very much from intervention strategies such as rereading, asking about missing information, knowing that one can do something to clarify one's understanding. (Gill, 1996)

It is in this area that this study is situated. The study concerns itself with weak students in a particular subject area. It seeks to find out what they do when they do not understand their text or parts of a lecture. In particular it seeks to find out whether students are able to use the question-generation strategy to resolve their problems of lack of understanding. A secondary aim is to find out whether they ask questions of their lecturer and if not, why not.

### **2.3.3 Self-questioning and prose processing**

Many studies on instructing students on how to ask questions have succeeded with ease, that is, they have succeeded in getting students to ask more questions.

Do student-generated questions enhance prose processing? In taking up this issue, Bernice Wong (1985) looked at 27 studies and, using her own criteria, found that 14 of them did undoubtedly enhance prose processing through self-questioning.

Nine failed and 5 had mixed results largely because of weaknesses in the theoretical concepts underpinning those studies. According to Wong, there are three theoretical perspectives that have led to the advocacy of self-questioning instruction among educators, namely active processing, metacognitive theory and schema theory. At that time, metacognitive theory was relatively new, hence the overwhelming majority of studies adopted the theoretical perspective of active processing. The weaknesses in those studies that made it difficult to determine the success of self-questioning in enhancing prose processing was the "lack of conceptual clarity regarding student's active processing of prose" specifically, "...the kinds of psychological processes ... students are engaged in when we think they are actively processing prose. Different self-questions may elicit and mobilize different kinds of psychological processes" (Wong, 1985, p.228). These processes, according to Wong, involve the kind of encoding processes described by Cook and Mayer (1983, in Wong, 1985) namely, selective attention; acquisition: the transferring of information from attention to long-term memory; construction: establishing internal connections among ideas learned from the text; and integration: accessing existing knowledge and mapping new ideas onto that

knowledge. Cook and Mayer (1983) quoted by Wong (1985) suggest that the encoding process may serve as goals of various reading strategies. For example, a reader's underlining of key words or phrases can serve the goal of selecting those textual units for memory storage.

Wong (1985, p.229) submits that in self-questioning instructional research,

...we need to conceptualise what specific cognitive processes are manipulated and mobilised by the type of self-questions used, analogous to the kinds of conceptualization made by Cook and Mayer(1983). Such needed conceptualization would clarify what psychological processes mediated the instructional efficacy of self-questioning. This could lead to matching type of self-questioning instruction with specific needs of students. For example, for learning-disabled children with deficient selective attention, we may teach them to generate self-questions to focus on key words and ideas in their reading.

## **2.4 Student questioning as a speech act**

This study deals with the phenomenon of having a question to ask which is a metacognitive activity as well as with the phenomenon of verbalising the question.

Verbalising questions is a part of communication, and can be thought of as a "speech act" (Austin 1962, in Hudson, 1980) involving notions of context and



appropriateness. It is therefore relevant to look at questioning activity and at factors that lead to questioning activity in class or outside of it.

#### **2.4.1 Student questioning activity**

Do students ask questions in class? <sup>1</sup>Dillon (1988) did a study of 27 high school classrooms in the US to determine how many information questions students asked. He observed classes that were engaged in discussion, not lectures, and found that questions took up two thirds of the teacher's turns at talk. Only 6 percent of student turns were interrogative and less than 1 percent consisted of information seeking questions. Dillon was interested not so much in classroom participation as in the quality of questions that sought knowledge. "What trivial questions we hear! What sad pieces of information they seek! And yet what grand themes they touch upon – racist trials, abortion armed revolution, pollution, religion, marriage." (p.199)

If one were to take a close look at Dillon's findings, we would find that he divided questions students asked into 4 categories: conversation repair, self-answered, expressive/argumentative and information type. The last category is what he was interested in and of that, there were 2.4 questions per hour. He excluded almost half the number of questions that students asked because they belonged to the expressive, argumentative category. Furthermore, if one were to include all categories of questions, then students asked 18 questions per hour or one in every 3 minutes. By Malaysian standards, if one were interested in class participation,

that is not bad. Besides, Dillon was looking only at oral questions that students asked in the course of a discussion and not at questions asked in connection with a text that students are required to comprehend.

Portin's (1993) study on Chinese students studying in the US was one of the few that dealt directly with the problem of inhibition. She found that these Chinese students did not ask questions in class because they feared confrontation, being singled out, losing face and making a mistake. Furthermore, they were unable to express their questions; they were unsure as to whether the question was appropriate and they were unsure as to how and when to interrupt.

#### **2.4.2 Classroom interactions**

Karabenick (1992) studied the role of perceived teacher support and teacher effectiveness in the student questioning process. This study is interesting because it pointed to the need for an objective judgement of teacher effectiveness. The study was based on students' perceptions of teacher effectiveness but this was found to be unreliable because students who understood, thought their teacher was good and would ask questions. Students who were confused thought their teacher was not good and hesitated to ask.

Karabenick (1992) discusses the factors that lead to questioning: 1. student awareness of confusion 2. having a question to ask 3. the cost of asking it 4. asking the teacher a question.

Goodwin's (1983) study of effective classroom interactions had some useful ideas on instructor behaviour that supported participation. For successful interaction, several factors must be in place namely, 1. physical setting 2. instructor attitude as demonstrated by her attending behaviour, eye contact, use of non-verbal gestures to indicate support, confusion or understanding 3. calling on students by name, using a friendly tone and helping out the non-volunteer 4. wait time for responses which will influence whether or not the teacher gets a response and the quality of that response 5. handling student responses to questions 6. responding to student questions with nods and smiles and probing to make students explore initial comments.

Aitken and Neer (1991 in 1992) found that methods of instructor encouragement were the best way to improve student questioning. Their study found 1. that social climate was important to all not only to high classroom communication apprehensives (CCA's) 2. that high CCA's did not respond as positively to conducive instructor behaviour as students high in motivation. In trying to determine what kind of students ask questions, they found that the following factors featured prominently: 1. achievement level 2. communication ability 3. class preparedness 4. motivation level.

Johnson (1980), in writing about the influence of peer interactions on school - outcomes warns of the dangers of underestimating the importance of peer influences on student's cognition and social development. Lewis and Rosenblum

(1975, in Johnson,1980) go so far as to say that social interactions with peers may be the primary relationships in which development and socialisation take place. In order for peer relationships to be constructive influences, they must promote feelings of belonging, acceptance, support and caring, rather than feelings of hostility and rejection.