Diagnosing Comprehension Skills

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Abstract
The skills approach to reading facilitates diagnosis of reading comprehension by enabling various reading skills to be isolated. By testing students on each of these skills, teachers are able to develop a focused remedial programme. This paper presents four reading comprehension skills and shows how a diagnostic test based on these skills can be developed for students of English as a second or foreign language. The strategies here form the basis of the Reading Comprehension Skills Battery, developed as a research project in the National Institute of Education, Singapore (Lim, 1994; Lim, Ho and Wong, 1994). It is hoped that English teachers will benefit from being able to focus on specific reading comprehension strategies to assist the students improve their comprehension capabilities, both in the language and content area subjects.

The 'Skills' Approach to Reading

Reading is a complex skill in which various elements interact. It is convenient, nevertheless, to view it as composed of a series of identifiable and independent components. Such a discrete point approach is useful for teachers who have to deal with weak readers, as it provides a foundation upon which focused guidance can be based (Strother and Ulijn, 1987; Aaron and Joshi, 1992). By isolating the skills required in reading, teachers can more easily diagnose the specific areas which students need training in, and give these students meaningful remedial assistance by creating exercises which specifically aim to increase the students' competence in the skill.

The skills approach is extremely useful when dealing with students reading in their second language, as they tend to read more slowly, understand less and have a greater chance of comprehension failure than when reading in a native language (Alderson, 1984; Greenall and Swan, 1986). While the

causes of comprehension failure among readers using their second language may sometimes be a simple matter of not knowing a word, it can equally be a deficiency in one or more of a number of specific reading skills.

While proficient readers are able to monitor their reading performance and activate appropriate strategies to compensate for problems, weak readers need to be shown how to consciously and deliberately activate specific reading skills when reading difficult texts. Nuttall (1996) points out that certain kinds of practice definitely help students to read more effectively. Highlighting the diverse strategies available and giving the students practice in using these strategies are the teacher's key to assisting weak readers. By being able to identify specific strategies that students have not developed sufficiently, it is possible to initiate instruction focusing on the strategies needed so the students are in a position to consciously activate them when they are required. Similarly, when readers become overdependent on a single strategy, they have to be shown the full scope of reading techniques available. It therefore benefits a student greatly to be given direct instruction on specific reading skills and the chance to practice with exercises which isolate these reading skills.

For a teacher to effectively help readers improve their comprehension, it is necessary to be clear as to what skills their students are weak in, and which can be practically developed. Determining which skills are necessary for reading comprehension is, however, no straightforward task. Various skills have been identified as affecting comprehension, and there has been little agreement on the relative importance of each of the skills on reading. For example, Munby (1968) isolates the following four skills as important for reading comprehension: *finding the sense and surface meaning of a text*; *finding implications and inferences*; *following the structure of the text paragraphs*; and *integrating personal background knowledge with data from the text.* Goodman (1976), on the other hand, outlines five skills he considers useful for comprehension: *scanning text*; *fixing on print*; *selecting appropriate information for understanding*; *predicting outcomes*; and *using previous knowledge of semantics, syntax and phonology.* Yet another categorisation is provided by Barrett (1972), who proposed a Taxonomy of Reading Comprehension which identifies four broad skills which, he argued, are the most salient skills necessary for comprehension, and can be used as a basis for isolating reading comprehension problems: *literal comprehension*, *inferential comprehension*, *evaluative comprehension* and *appreciation.*

This wide range of skills proposed as important to reading comprehension provides contradictory guidance to teachers and facilitators involved in diagnosing and remedying of reading comprehension problems. Any of the skills listed, however, are valid and can be included in a diagnostic reading comprehension test. The final choice of which skills are included will depend on several factors, including the needs of the students and the teacher's personal perceptions of the processes involved in reading.

Developing Reading Strategies

Four reading comprehension skills will be discussed here, *following a sequence*, *predicting*, *making inferences* and *identifying the main idea*. First, the importance of these four skills in the reading comprehension process will be noted, and then an example of the way in which test items for these skills can be developed will be presented. While other skills have been mentioned and are undeniably important to the reading comprehension process, these four are included here merely as examples of how reading strategies can be exploited for diagnostic and remedial purposes in EFL teaching.

Following a Sequence

Sequential organization, used especially in narratives, presents chronological progressions of events or successive stages of a process. Being able to follow these sequences is fundamental to text comprehension (Barrett, 1972; Tay, 1979; Walling, 1981; Irwin, 1991). Identifying sequences relies heavily on: the reader's knowledge of tense structures and the relationships between clauses, phrases and sentences; the reader's ability to connect ideas expressed in the sentences into a coherent whole; and the ability to interpret cues in paragraph construction and sentence organization (Greenall and Swan, 1986; Irwin 1991). It requires that the reader be able to identify cohesive devices used to show relationships, causation and sequence, particularly sequence markers such as 'then', 'next', 'finally', 'another', or 'subsequently' (Tay 1979).

Readers who are insensitive to text organization are likely to find comprehension and recall difficult. Such readers are unable to identify the formal schema used in the text and cannot, therefore, structure their understanding coherently.

According to Schonell (1978), extracting a sequence of related steps is not only required in comprehension, but also in arriving at logical conclusions based on the text. This point is easily illustrated with the following example:

Jack felt much better after his holiday

While the text is arranged so that the sequence of events is clear, the relation between the events, in this case causality, is left implicit. Without a sound understanding of the sequence of events, no inference or conclusions can be drawn by the reader (Carrell, 1987).

Varghese (1994) points out that in addition to its importance in understanding narratives, understanding sequential organisation is applicable to comprehending content area texts such as history books which are arranged chronologically, and physical science and biology textbooks which are organized sequentially.

Predicting

The psycholinguistic view of reading comprehension describes reading as an active process in which the reader forms expectations about the material being read, makes predictions based on the graphic input, and then samples the text to confirm or revise the predictions (Goodman, 1976a; Goodman 1976b; Steffensen, 1987; Goodman, 1994). Sampling and predicting are a crucial part of reading. By attempting to anticipate the topic or outcome of the passage, the reader can activate the relevant schemata and assess what is already known about the subject matter, making it easier to allocate attention to details that are new or unexpected (Walling, 1981; Greenall and Swan 1986, Nuttall, 1996).

During the comprehension process, Irwin (1991) argues, the reader synthesizes the literal content of the text, his personal knowledge and his imagination to predict the outcome of a narrative. The hypotheses the reader makes are modified continuously by what the text says. When a word or phrase is encountered that does not fit the schema, the reader rereads or readjusts his thoughts to accommodate the new schema. When the reader shares the schema intended by the writer, he is able to predict with certain accuracy the topic or direction of the next sentence or paragraph. For this reason, comprehension is improved when texts have narratives or structures that are consistent and predictable (see also Harmer, 1991; Nurss and Hough, 1992; Nuttall, 1996).

Readers who have not developed the ability to elaborate on the text being read with personal knowledge will find activating schemata problematic, and may experience progressively more difficulties in comprehension at higher levels. Similarly, readers who activate inappropriate schemata while

reading, or who do not have knowledge on the topic being read, will find it difficult to make accurate predictions and anticipate the way in which the story develops. This serves to increases the text's difficulty and impedes comprehension.

Making Inferences

Rubin (1993) defines inference as 'understanding that is not derived from a direct statement but from an indirect suggestion in what is stated' (p. 218). The fundamental importance of this reading comprehension strategy has been referred to by numerous researchers and authors (e.g., Munby, 1968; Barrett, 1972; Ruddell, 1976; Greenall and Swan, 1986; Masters *et al.*, 1990; Steffensen, 1987; Irwin, 1991; Pearson *et al.*, 1992). Schonell (1978) points out that the ability to make inferences is extensively used in mathematics and science, where a student has to sort out essential from non-essential data and perceive elements in data that are not explicit.

Writers frequently create sentences leaving some information out, expecting the reader to make appropriate inferences or add in the appropriate information from their shared experiences. Providing the reader with the evidence required but expecting him to take the final steps in drawing unstated conclusions is a technique used extensively by mystery writers. Aaron and Joshi (1992, p. 164) show that even in simple sentences such as:

> *Jack and Jill went to McDonald's and had a great time*

the reader is required to infer information which is essential for understanding the events described. In this case, it is expected that the reader uses his knowledge about McDonald's to infer that Jack and Jill had a meal there together. By omitting such arbitrary details and expecting the reader to make the necessary inferences, writers make their texts more interesting by avoiding redundancies.

Readers also use inference to understand unfamiliar words. Nuttall (1996) illustrates this strategy with the following simple example:

> *She poured the water into the tock. Then, lifting the tock, she drank. Unfortunately, as she was setting it down again, the tock slipped from her hand and broke. Only the handle remained in one piece* (p. 72).

From the context of the narrative, we are able to infer the meaning of the non-word 'tock'. From the first sentence, we can determine that a tock can hold water, while from the second sentence we find out that it can be lifted and is used for drinking (so it is not a hole or a car's radiator). With each occurrence of the word, we are able to become more precise with our

inference. Conscious use of this strategy is invaluable to readers with weak vocabularies, and it can be easily developed with training.

Identifying the Main Idea

In much of what we read every day, it is sufficient to read just to get the main idea of the passage. The value of this strategy for reading comprehension has been widely noted (for example, Munby, 1968; Tay, 1979; Masters *et al.*, 1990; Pearson *et al.*, 1992; Aaron and Joshi, 1992). According to Schonell (1978), a skilled reader not only knows how to locate main ideas, but also to group important details around each main idea.

In order to successfully identify main ideas, readers have to be capable of identifying the gist of the passage and relating it to a relevant schema, assessing the value of the information for its relevance and importance, and reducing the details of the passage to a manageable size for recall (Irwin, 1991). Once a schema for the text has been activated, the details in the passage can be properly organized and the irrelevant material ignored. If the main idea is not correctly identified, the reader is forced to retain major and supporting details, thus burdening text processing and recall with far too many pieces of irrelevant information.

Rubin (1993) notes that finding the main idea of a paragraph is not easy, even if the idea is stated directly in the paragraph. If the reader's prior knowledge on the topic is poor, the task is made more difficult (Afflerbach 1990, in Rubin 1993). Should the reader fail to activate the correct schema, the chances of identifying the main idea is decreased and reading comprehension is made more difficult.

Using the Skills Approach in the Classroom

The skills approach is useful to teachers who need to identify ways in which to help their students improve their reading comprehension. The purpose of isolating these four skills, or any other reading comprehension skill, is to enable the teacher to identify areas in which students are having difficulties with their reading, and so be able to create meaningful exercises to assist students develop these skills.

In preparing material to diagnose students' ability in any reading comprehension skill, the skill should be carefully isolated. Items which aim to give students a chance at working on their inferencing skill should not, for example, also demand prediction or identification of main ideas. For this

reason, multiple-choice style questions are useful. Since students do not need to produce sentences of their own, the reading process can be focused on, and the difficulties associated with writing and expression can be avoided. Administration time is also decreased, effectively allowing more items to be tested in the same time.

For the purposes of this paper, only four of the numerous possible reading comprehension skills have been discussed, serving as examples of the way in which skills may be diagnosed. The examples presented below are taken from the Reading Comprehension Skills Battery[1], a diagnostic test developed as a research project in the National Institute of Education, Singapore (Lim, 1994; Lim, Ho and Wong, 1994). The battery has been successfully used in diagnosing reading comprehension problems in students in Singapore and Sri Lanka (Lim, 1993; Lim, Ho and Wong, 1995; Lim and Yap, 1997).

Following a Sequence

It is expected that students who have difficulties with determining a sequence of events are those with a general inability to identify text structure and organisation. According to Pearson *et al.* (1992), readers can be instructed in the use of this strategy to assist them during times of comprehension failure. Items which assess students' ability in this skill should, therefore, concentrate on elements of text structure. A diagnostic item may, therefore, look something like the following:

Read the 5 sentences below. They are not in the correct order. Put them in the order that makes the most sense to you.

1. Suddenly we noticed that a special light had appeared, and then disappeared into the western horizon.
2. In our fright, we hesitated to report the sighting to the authorities.
3. Immediately we imagined that it was a UFO.
4. That afternoon we were wandering in the field looking for something to do.
5. To our amazement much later, the adventure was to make us famous.

In what order did the events take place?

a. 5, 4, 1, 3, 2.
b. 5, 2, 1, 4, 3.
c. 4, 1, 3, 2, 5.
d. 1, 2, 3, 5, 4.

Predicting

Students who rely on a bottom-up reading strategy are relatively passive and unable to interact with the text to a degree that would facilitate anticipation

of story development. Students who have difficulty with this skill are those who require a greater familiarity with narrative patterns, or training in activating appropriate schema during reading. With practice, then, the reader will have increased confidence in taking risks during reading, and will be able to interact more actively with the text. Items such as the following may be used in both diagnosing and developing student's ability in this skill:

Read the following passage below and answer the question on it. Choose the best answer.
Like all conscientious men and women who work and worry too severely and grow unconscious of their bodies, Ake woke up one morning in his mid-forties to find himself transformed (in the night, it seemed) into a blimp.
Her cheeks looked like apples, his thighs were lumpy and his belly - don't ask! His children mocked her when he mentioned his early days of glory on the football field. And then their bed collapsed, his wife threatened the worst.
What do you think Ake is likely to do next?
a. Start watching what he eats, and exercise regularly.
b. Show his children the photographs of himself as a football hero.
c. Scold his children for being insensitive to his feelings.
d. Divorce his wife

Making Inferences

Since the information necessary for the inference is not specifically stated, it is necessary for the reader to recognize relevant words and phrases, understand the vocabulary expressed therein, and relate these to appropriate contextual information. This skill relies, in part, on the student's ability to deduce the meaning of unfamiliar words from the context (Harmer, 1991). Readers unable to relate schema to the text and elaborate on the details expressed by the author can be diagnosed with items such as this:

Read the passage and complete the statement that follows. Select the best answer.
There is the way I teach, and there is another way. Let me give an example: if a girl asks a question, it might raise some interesting issues. Now, the other way, you'd waste the whole period and follow up those issues, and that is all right. But that is not my way. I have no time for answer or anything that leads off the syllabus. I teach for results.
The author is mainly interested in:
a. preparing students for examinations.
b. different ways of teaching.
c. answering questions that raise issues.
d. not completing the syllabus.

Identifying the Main Idea

Exercises in main idea identification are by no means rare, and are found in most EFL coursework books. Items such as the following may give teachers an idea of which students need assistance with organizing information in a text and determining the parts of the text which are superfluous to the main idea.

Read the story below.

"Don't move, Somkuan, keep very quiet. There's a snake behind you," Thaksin said as calmly and as clearly as he could, although fear was obviously in his voice. I was rooted to the spot where I had been playing in our little stream. Standing with feet in the water, I practically froze when I heard his warning.

This story is mostly about:

a. encounter with a snake.
b. the water snake.
c. fear of snakes.
d. warning about a snake.

Developing a Diagnostic Test

The purpose of creating items such as this is to be able to determine which reading comprehension skills students are experiencing problems with. In order to be of any practical use to the teacher in diagnosing weaknesses in reading, a diagnostic test such as this needs not only to be accurate in finding weaknesses, but also relevant to the learning styles and problems the students may be experiencing. Commercially available tests available for such diagnosis offer the benefit of reliability and validity which is not easily achievable in tests developed by a teacher for use in her class, but they are not always culturally appropriate, having often been developed and normed in other countries, and may focus on reading skills which the teacher is not necessarily interested in diagnosing.

Developing a test for use requires the teacher following five steps. Firstly, the skills to be included in the test for diagnosis need to be chosen. This paper has proposed four possible skills, but others may be included depending on the needs of the classroom (Nuttall 1996). Secondly, the teacher needs to decide on the format to be used for the individual items in the test. The items included in this paper, and those in the Reading Comprehension Skills Battery, are multiple choice items based on short reading passages. The advantages of this format have already been mentioned, but again, the teacher should use a format appropriate for the aims of the battery and perhaps what the students are familiar with.

The next step is to develop a battery of items with which to accurately diagnose students' reading difficulties. The next step in the process of developing such a battery is to decide how many items should be included. While it is desirable to have a large number of items to ensure accuracy, too many items will surely overwhelm the students. Furthermore, constraints on time available to administer such a battery without interfering unduly in class time need to be considered, as does the diminishing of student's motivation and interest as test fatigue sets in. The Reading Comprehension Skills Battery, from which the items in this article are taken, includes 14 multiple choice items for diagnosing each of the four skills it includes.

Having prepared a number of items, the teacher then has the choice of administering the battery to the entire group of students, or only to those students whose reading needs remedial attention. The decision will depend largely on what the teacher expects from the battery. By giving the entire cohort the items in the battery, the teacher is in a position to utilize the results as a needs analysis in that the data will serve as an indication of what the student population as a whole requires. Using such data, the teacher can develop a reading programme relevant to the particular weakness of the whole class and spend relatively less time on those reading skills which the students seem to have less trouble with.

If, on the other hand, the teacher is concerned primarily with a small group of students who require remedial reading work, the data produced from administering the test to them can guide a remedial programme which supplements the class reading syllabus. The teacher would thus be able to provide a highly focused remedial programme, concentrating on the reading skills most needed by the weak readers.

Analysing the results of the data is the final stage in the development of a reading skills battery. For each student, the total number of correct answers on each of the skills included in the battery should be compared. Should there be one skill on which the student is particularly weak, the score for that skill will probably be lower than for the other skills. Comparison of scores between students may also be done. This will give some indication of the differences in reading ability within the group tested. Teachers may wish to compare the results of students' performance on each skill individually, or sum the results of all the skills for each student and compare the total reading score for a global reading skill comparison. Students who are weak readers

generally may not show differentiation between skills, but their low global reading score will indicate that work on all reading skills is needed.

For a large sample, more complex analysis of the data using computerised statistical analysis programmes such as Quest (Adams and Khoo, 1993) have been used successfully (Lim, Ho and Wong, 1994; Lim, 1996; Lim and Yap, 1997). Such programmes are based on the Rasch Model of test analysis and greatly expand the range of analyses possible (for more details, see Wright and Bell, 1981; Hambleton and Jones, 1993; Masters *et al.*, 1989).

Conclusion

In spite of objections from various authors, the skill approach to reading comprehension is useful for the purposes of diagnosing comprehension problems. Numerous skills have been listed as being important during reading to guide diagnosis. It is generally accepted that certain strategies exist which readers can consciously use when reading difficult texts. Through diagnosis, it is possible to determine which of these strategies are not available to a reader, and specific strategy training can be implemented to help readers improve their reading of difficult texts.

Four skills were highlighted and the way in which they can be used to assess and help students improve their reading comprehension was discussed. Examples of the items from the Reading Comprehension Skills Battery were presented and ways in which a battery may be developed for classroom use discussed. Suggestions on how teachers may develop their own diagnostic reading tests were made. While developing such a diagnostic tool may be time consuming for busy teachers, the benefits that can be potentially derived are worth noting. Not only can the teacher objectively determine which reading skills need attention in the classroom, but highly focused remedial programmes can be created for specific individuals with weaknesses in particular reading skills. In situations where the syllabus is flexible enough to allow for teacher selection of learning objectives, then I believe that the skills based approach to reading leading from a diagnostic test such as this can be very beneficial to students' reading ability.

Notes:

1. The Reading Comprehension Skills Battery is available from Stephen Louw, who can be contacted at istelouw@cc.kmutt.ac.th.

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