

COMBINING INFORMATION FROM MULTIPLE SOURCES

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INTRODUCTION

Many academic tasks require that individuals combine information from two or more texts in order to reconstruct their ideas or beliefs about a topic. As yet, however, we have little knowledge of how students approach such tasks tactically, in either their first or second languages. The need to have an existential description of how bilingual readers approach discourse synthesis activities led to the design of a project where six individuals were studied as they read three overlapping texts and completed a series of summary tasks.

Approaches to synthesis tasks

When a second or third text is introduced into a reading lesson, students have the opportunity to make connections between one or more aspects of a text, and the other texts they are reading. The connections are not limited to the input texts alone. Connections can be made with background knowledge and with oral and written texts produced by other participants. Amongst second language learners, four patterns of response have been noticed when students were asked to reflect on two narrative texts related to a particular theme (Chi, 1995). In *storying*, readers describe another experience stimulated by the current text. In *associating*, readers link the text they are reading with a previous text without further comment. When students are *integrating*, they are applying cultural knowledge to the interpretation of the current text. *Evaluating* occurs when readers generate their own views, values, or conclusions from a range of textual resources at their disposal.

In the case of native speakers of English, Hartman (1992) has shown that the connections made within, between, and beyond a set of input texts could be traced back to the particular stance adopted by the readers. Some readers approach a synthesis task by becoming totally immersed in the text they are currently reading to the exclusion of other sources of information. Other readers try to connect what they are reading with what they have previously read, viewed, heard, or have been told. A last category of readers may try to assert their own meaning irrespective of the information in the texts.

Specific learning tactics

As a matter of course, proficient readers integrate incoming information with prior knowledge and experience, monitor their own comprehension, and generate their own notes and summaries (Flood and Lapp, 1991; King, 1990, 1992; Wittrock, 1990). Presumably such tactics can generalize just as successfully to reading across texts as to the reading of a single text. Proficient readers will know when and why to use particular tactics and will adjust or select new ones when they fail to comprehend, learn from material, or satisfy the demands

of a task. Proficient readers have been shown to use a wider range of tactics than less proficient readers, who typically confine themselves to functionally less effective routines such as rote memorisation, translation, repetition and deduction (Kletzien, 1992; Wade, Trathen and Schraw, 1990). There is thus a need for more studies that trace what a range of readers do when faced with discourse synthesis tasks.

METHODOLOGY

Research questions

The study was designed to answer the following questions:

- 1 What study tactics did subjects use when they read three texts with different perspectives on the same topic?
- 2 To what extent were the subjects successful in combining the information from various sources during a writing task?
- 3 How did the students view themselves as readers?

Subjects

Six subjects, a native speaker of English and five bilingual readers of Thai and English, were selected with a view to differentiating between subjects at the intermediate to advanced levels of reading proficiency. The native speaker and two most experienced bilingual readers were used to pilot the materials and gather reference data on how practised readers approached the task. The other three subjects - the less practised readers - were studied a month later and their tactics were compared to those of the practised readers.

Procedure

A study booklet was designed for the topic, *Protecting the World's Forests*. The subjects were asked to initially answer two questions that identified their background knowledge of the topic. Then they studied three texts on current issues associated with deforestation: *The Price of Clearing Rain Forests* (126 words); *Consequences of Deforestation* (89 words); and *Campaigns to Save Forests* (144 words). After that they completed two discourse synthesis tasks that required them to link information from the various sources. Finally, the subjects completed a 32 item questionnaire on the use of reading and study tactics which was developed from a variety of research reports (eg Nyikos and Oxford, 1993; Wade, Trathen and Schraw, 1990). Bilingual subjects were able to clarify items and responses in Thai if they wished. Throughout the procedure, the subjects' think aloud protocols were audio-taped.

Analysis

The think aloud protocols were transcribed verbatim. If Thai had been used as the language of self report, the transcript also included an English gloss. The discourse was then segmented into utterances and coded in two stages. Firstly, generative utterances were separated from non generative discourse. Generative utterances were those produced by the speaker from his

or her language planning. Non-generative discourse were utterances produced through reading a text aloud or by repeating the utterances of another person, that is, the utterances were not planned by the subjects concerned. Secondly, the utterances were classified according to the type of tactics implicated in their production (see Figure 1).

Category	Example
1 Recalling background knowledge in respect to the topic	/Now in Thailand there are sometimes floods after the rain/ (S3)
2 Justifying an attitude by stating or restating the knowledge that supports the attitude	/I think it's right to raise consumers' consciousness about forest destruction/ (S6)
3 Confirming information that the speaker is aware of and in basic agreement with	/I know Greenpeace is very active in campaigning for environment conservation/ (S2)
4 Recalling examples of points previously encountered in the texts	/That enables me to perhaps think about one of opportunity costs a lot/ (During the study of text 2) (S1)
5 Making metacognitive statements regarding: a The requirements of the task b The interlocutor's state of knowledge	/Now I must say something about the lost of forest and the thing people got from forests/ (S5) /I don't know what tropics' means/ (S4)
6 Making a prediction based on text information	/So I think I know what the article is going to be about/ (S1)

Figure 1: *Categories of talk in the think aloud data*

The written answers to the summary tasks were assessed for the extent and quality of the synthesis of information in the texts in response to questions on the topic. The self-reports were analysed for evidence of tactics used by the subjects.

RESULTS

Two sets of data were derived from the six subjects: norming data were from practised readers; and comparison data from less practised readers.

1 Amount of talk

The subjects in the sample did not differ greatly in the proportion of generative talk produced by the materials (see Table 1).

Utterance	Practised readers	Less practised readers
Generative talk	132 (68%)	167 (70%)
Non generative talk	54 (28%)	64 (26%)
Other	7 (4%)	9 (4%)
Total	193 (100%)	240 (100%)
Range	191 - 194	210 - 278

Note: Frequencies refer to the mean number of utterances (and percentages) in the discourse of the subjects as an identified group.

Table 1 Amount of talk produced in the verbal reports of six subjects

Four subjects, including one of the practised readers, chose to think aloud in Thai even though the task was requiring English medium responses. Even though the amount of talk produced by the materials was similar across subjects, the talk was distributed differently across the reading and writing components of the cycle. For example, experienced readers seemed to have time to talk about text during the act of reading itself in a way that was not always apparent in subjects who were reflecting on the text in Thai.

2 Functions of generative talk

The utterances produced from the language planning of the subjects were classified in terms of the function they appeared to be fulfilling from a discourse synthesis point of view (see Table 2).

Category	Practised readers	Less practised readers	Rank
Justifying an attitude by stating or restating the knowledge that supports the attitude	277 (70%)	372 (74%)	1
Making metacognitive statements regarding:			2
a. The requirements of the task	61 (15%)	89 (18%)	
b. The interlocutor's state of knowledge	19 (5%)	17 (3%)	
Recalling background knowledge in respect to the topic	15 (4%)	9 (2%)	3
Confirming information that the speaker is aware of and in basic agreement with	13 (3%)	7 (1%)	4
Recalling examples of points previously encountered in the texts	8 (2%)	5 (1%)	5
Making a prediction based on text information	2 (<1%)	1 (<1%)	6

Table 2: Reading and study tactics instantiated in the verbal reports of the subjects

For both practised and less practised readers, the most frequent tactic involved stating and restating information in the texts in order to justify a point of view on the topic. At least two out of every three moves that a subject made to learn from the texts and respond to the tasks involved paraphrasing of this kind. The next most frequent tactic involved reflection on the part of the subject as to the requirements of the task or to the person's state of knowledge. Tactics involving the recall of background knowledge or previously encountered information, the confirmation of knowledge, and the making of predictions were reported only infrequently, although relatively more so by the practised readers.

The less practised readers used the same range of tactics as the more practised readers and with similar frequencies. The restatement of information was clearly the most preferred tactic (74%), followed by talk associated with clarifying the task and personal states of knowledge (21%).

3 Quality of the summaries

The written summaries were quantitatively scored according to the number of information units included in the summary writing tasks (see Table 3). The subjects varied considerably in the number of information units. Two subjects were able to coordinate in their texts. The more practised readers were able to represent four times the number of propositions from the various sources from which they were generating text.

Subject	Quantitative Score	Qualitative assessment
A	30	Integrated summaries
B	30	Integrated summaries
C	14	Linked summaries
D	7	Restatement of isolated information
E	14	Linked summaries
F	7	Restatement of isolated information

Table 3: Reading task assessments

The summaries were also rated for the integration of the information units in the text. Three patterns were noticed. The two most practised readers not only integrated information across texts and their background knowledge, but they also organised the information hierarchically.

Other subjects linked information from the texts but they did not include their background knowledge in the summaries. Furthermore, propositions were linked serially through using temporal, causal, or associative connections. Finally, there were two subjects who neither integrated nor linked the information from the texts. Instead, they reproduced isolated sections of the source texts from memory, treating the summary as a set of more or less separate items. The three patterns are illustrated in Figure 2. On this occasion, subjects had been asked to summarise the main causes of deforestation (Question 2a in the task booklet).

Classification	Summary
Integrated summaries	The main cause of deforestation is the clearing of forest cover for farmland, the cutting of wood for fuel and the logging of forests for timber and profit. For example, 95% of the forest cover in Ethiopia has been removed and this country is continually requiring economic aid to off set the effects of failed crops and famine. S1
Linked summaries	The main causes are deforestation to make some medicine, the cutting down trees to convert into plantation and there is not enough awareness of negative result they must get. S3
Restatement of isolated information summaries	The main cause of deforestation is cutting because the demand of plants is higher so the logging company cut down more trees to balance a demand. Evidence: Greenpeace try to spread out campaign to protect forests around the world. S4

Figure 2 *Extracts from written answers*

4 Group differences in the use of tactics

An inventory provided data on the tactics that the subjects usually employed when reading and studying from academic texts. The subjects rated the extent to which they used thirty-two tactics using a five point scale (always, often, sometimes, seldom and never). The tactics represented a selection of language-based tactics, reading tactics, social learning tactics and task management tactics. The profiles of the two groups are shown in Figure 3.

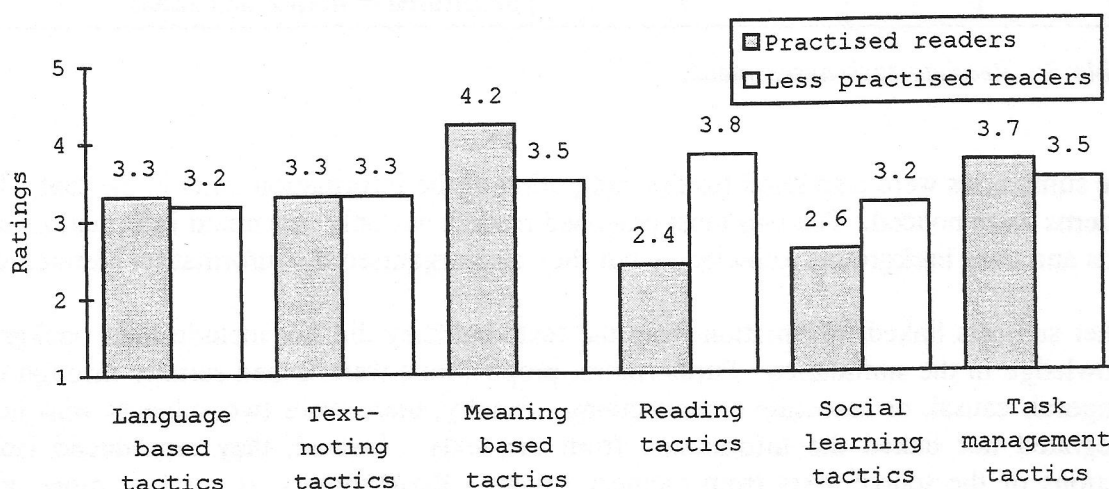


Figure 3: *The use of various types of study tactics by two groups of readers (expressed as means)*

The practised and less practised readers reported similar levels of use for language based tactics, text-noting tactics, and task management tactics. However, practised readers reported using meaning based tactics or mental tactics more frequently than less practised readers. In contrast, the latter perceived themselves using reading tactics and social learning tactics more frequently than was reported by the norming group.

The impression gained from the responses to the inventory was that the practised readers devoted relatively more of their time to the mental rehearsal and integration of information obtained in a reasonably efficient way from the texts, whereas the less practised readers tended to place their effort on the act of reading the texts (frequently using translation) and, secondly, on getting help by interacting with other people.

DISCUSSION

The extent to which people were able to learn from the input text depended partly on their understanding of the texts and partly on their ability to integrate the text with background knowledge. For some subjects the texts acted as the sole basis for their knowledge of the topic. In these circumstances, understanding the text and remembering the information became important concerns. Dictionaries were used and study tactics were directed at rehearsing basic stated information.

Other subjects appeared to place greater importance on background knowledge and used the texts to refresh, confirm, and rehearse that knowledge. For example, one subject overviewed the texts quickly during the initial reading and then related the gist of the texts to her background knowledge. For her, texts were scanned primarily to pick up new examples and new information that elaborated still further a coherent system of knowledge that she already possessed. The native speaker in the sample took this process a step further by applying the knowledge contained in the texts to environmental problems as a way of testing the personal value of the learning experience.

Subjects approached the coordination of the texts differently. Some subjects used the first text as the opportunity to build up a knowledge map of the topic, and the subsequent texts expanded the basic knowledge representation.

Other subjects read the text independently of each other and delayed the choice of the text that they used as the core text for their mental map of the topic. For example, one subject used text 2 as the core text, stating that text 1 was an introduction to the topic and that text 3 filled in knowledge gaps in text 2.

Other subjects appeared to read the texts as if they were separate and stand alone subtopics. They showed little or no evidence of seriously integrating the texts into a unified whole.

The less practised readers used only a limited number of tactics: looking up words in a dictionary, translating, and rote repetition. They may in fact have possessed more tactics in their repertoire, but if they did so, they chose not to use them in this study. The result was a mismatch between the tactics used and the strategies needed to accomplish the criterion tasks successfully. In contrast, the more proficient readers, with one exception, chose to use tactics that were appropriate for the criterion tasks. They seemed able to operate at several levels of text representation at the same time. They saw links between information in a single

text and across texts and with background knowledge. They were able to handle surface problems in understanding the texts as well as situational and semantic issues associated with representing the knowledge in discourse.

The results confirm the impression that, for some students at least, reading across texts is a difficult skill for which single text comprehension may not have adequately prepared them. It would therefore seem that new perspectives are required on the design of intensive reading lessons:

- 1 At least two texts should be used as the input for a lesson. The text should overlap in different ways (complement, contrast or critique).
- 2 A wide range of study tactics needs to be modelled, talked about and practised with the students. Special emphases should be placed on tactics that:
 - a integrate information from texts and with background knowledge
 - b apply information to situations the student is familiar with
 - c critically evaluate the nature and authority of the information.
- 3 Note-taking strategies need to be taught with the student taking increasing responsibility for improving the quality of the tactics employed.
- 4 The written outcomes need to focus on paraphrasing and knowledge transformation as a way of developing personal accounts of texts.
- 5 Assessment tasks should place significance on the integration of knowledge from various sources.

Discourse synthesis tasks provide a challenging opportunity for meaning focused output and an appropriate context for the acquisition of an important set of study tactics.

CONCLUSION

Teachers of reading in EFL tertiary programmes may have to reconsider the texts chosen for intensive reading and the kinds of tasks set for course members to do. The present project has shown that a small sample of overseas students enrolled in an English medium university had difficulty in writing summaries that combined information from several sources. Perhaps the origin of the difficulty lies in the overuse of single texts for comprehension practice and in an underemphasis on integrating and elaborating information.

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