

사전문장과 문단나누기가 설명글의 기억에 미치는 효과

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Preview Sentences and Paragraphing in Expository Text: Effects on Recall

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The present study examined the effects of preview sentences and paragraphing in expository text on subjects' recall of the text. College students who participated in this study were randomly assigned to one of four text version groups: the no preview sentences and no paragraphing group, the no preview sentences and paragraphing group, the preview sentences and no paragraphing group, and the preview sentences and no paragraphing group. The result showed no significant effects of preview sentences and paragraphing. However, students' learning ability being considered, significant interaction effects were found. Although subjects with high learning ability recalled well regardless of whether or not passage was paragraphed, subjects with low learning ability recalled more in paragraphing condition than no paragraphing condition. The implication of these results is discussed.

One of the main goals of reading a text (especially an expository text) is to get what the text is about (or content of the text) from physical arrangement of letters. Understanding the content of the text can be aided by many methods. Among them is segmenting the text into meaningful units.

Text segmentation can be done at various levels. This includes segmentation at the level of letter groups, segmentation at the level of phrases, segmentation at the level of sentences, and segmentation at the level of paragraphs. However, most of the studies

which dealt with the effect of text segmentation on reading have focused on the effect of phrase segmenting (Casteel, 1990; Frase & Schwartz, 19779; Keenan, 1984; Kim & Kim, 1990; MacDonald, 1983; Mason & Kendall, 1979; Moon, 1979; Raban, 1982).

One of the main purposes of this research is to examine the effect of paragraph segmenting (from now on, paragraphing) on comprehension, especially recall of text. Although we usually employ paragraphing in writing, few studies have investigated empirically the effect of paragraphing on reading comprehension. Among the few studies we can find Stark (1988). He examined the informativeness and effectiveness of paragraph cues. Especially he investigated the effect of paragraph cues on the reading speed and the judgments of what sentences were considered to be important. However, his research did not deal with the effect of paragraph cues on recall of text. Thus this study examined the effect of paragraphing on recall of text.

The present study also examined the effect of preview sentences on recall of text. Presenting preview sentences, like text segmentation, is considered as a method to aid comprehending text (Britton, Glynn, Meyer, & Penland, 1982; Dixon & Glover, 1990; Spyridakis & Standal, 1987). The examination of the effect of preview sentences was included in this study to investigate the effect of paragraphing and preview sentences more precisely. In standard text a preview sentence is usually presented at the beginning of a paragraph. That is, the meaningful segmentation of standard text is signaled in general by both paragraphing and preview sentences. Accordingly we need examine the separate and combined effects of paragraphing and preview sentences on reading comprehension. By including both variables, paragraphing and preview sentences, the present study could deal with the separate and combined effects.

METHOD

Materials

The text employed in this study was adapted from that used in Kim and Kim (1990). The text described the function of the liver and consisted of five paragraphs covering the following topics: digestion-promoting function, nutrients storage function, blood and flesh-forming function, chemical factory function, and circulation-regulating function. Each paragraph consisted of three idea units. The double-spaced text was approximately one page in length.

Four versions of the text were constructed. They

were distinguished by whether or not they included preview sentences and whether or not they were paragraphed according to topics. The preview sentences consisted of five sentences, each of which summarized one of the five topics. The four versions of the text were as follows: the paragraphing and preview sentences version which was paragraphed according to the five topics and contained the preview sentence at the beginning of each topic; the paragraphing and no preview sentences version which was paragraphed according to the five topics but did not contain the preview sentences; the no paragraphing and preview sentences version which was not paragraphed but contained the preview sentences at the beginning of each topic; and the no paragraphing and no preview sentences version which neither was paragraphed nor contained the preview sentences. The four version of the text differed only in terms of paragraphing and presence of the preview sentences.

Design

The independent variables were paragraphing of text and presence of preview sentences. The dependent variable was number of idea units recalled following instructions to "write everything you can remember about what you have read."

A 2 (paragraphing vs. nonparagraphing) * 2 (preview sentences present vs. preview sentences absent) factorial design was used. Both the paragraphing and the presence of the preview sentences factors were the between-subjects variables.

Subjects

Thirty-two undergraduate students from a Women's University located in Seoul participated in the study. They were randomly assigned to four treatment groups; the no preview sentences and no paragraphing group(n=8), the no preview sentences and paragraphing group(n=9), the preview sentences and no paragraphing group(n=8), and the preview sentences and no paragraphing group(n=7). They were run in a group.

Procedure

The subjects were given a booklet including instructions, a learning text, and a test sheet. The instructions were to read the text carefully because immediately afterward they would have to write all that they could recall from the text. The subjects read the learning text for 4 minutes, then rated the comprehensibility of it by 5-point scale. (1 was 'very easy' and 5 was 'very difficult'.) After the subjects

had finished the rating, they recalled the learning passage.

Scoring

The number of idea units the subjects recalled from the passage was scored by two independent scorers. Correct recall of one idea unit was scored 2 points and partial recall of it was scored 1 point. The scorers reached .98 agreement on initial scoring, and divergent scores were resolved in conference. The maximum score was 30 points, because the passage included 5 paragraphs, each of which consisted of 3 idea units. In this scoring preview sentences were not considered.

RESULTS

Table 1 shows the results. A 2 (paragraphing vs. nonparagraphing) * 2 (presence vs. absence of preview sentences) between-subject analysis of variance was conducted. This analysis yielded no significant effects. The main effect of paragraphing was not significant, $F(1,28)=.71, p>.05$. The main effect of presence of preview sentences was not significant $F(1,28)=1.15, p>.10$. And the interaction between them was not significant, $F(1,28)=.19, p>.10$. These results indicate that neither paragraphing nor presence of preview sentences in text is helpful to recall of text.

Table 1
Means and Standard Deviations of Subjects' Scores on the Recall Test As a Function of Paragraphing and Preview Sentences

Paragraphing	Preview Sentences	
	Without	With
No Paragraphing		
M	13.25	15.63
SD	6.67	4.10
Paragraphing		
M	15.22	16.71
SD	3.93	4.11

However, there are some evidences that facilitative effects of signals on comprehension and recall of text depend on the characteristics of reader. That is, signals are more beneficial for poor readers/learners than for good readers/learners. Especially several studies on the effect of phrase segmenting reported that phrase segmenting facilitated the comprehension of poor readers but not that of good readers (Kirby & Gordon,

1988; Mason & Kendall, 1979). Consequently, the results of the experiment were reanalyzed according to subjects' reading ability. As there was no standard test of reading ability, we divided the subject into good and poor readers according to their academic achievement in the class. In one study Gernsbacher, Varner, and Faust (1990) reported high correlation between verbal SAT (Scholastic Aptitude Test) and their comprehension tests.

At the end of the semester the subjects were equally divided into poor readers and good readers based on their performance on examinations in the class. Out of the 32 subjects, 16 were categorized as poor learners (or low ability subjects) and 16 were categorized as good learners (or high ability subjects). The number of subjects of good and poor learners in each treatment group was as follows (the first number of the parenthesis designates the number of good learners and the second number of the parenthesis designates the number of poor learners); the no preview sentences and no paragraphing group(n=4, 3), the no preview sentences and paragraphing group(n=3, 5), the preview sentences and no paragraphing group(n=5, 4), and the preview sentences and no paragraphing group(n=4, 4).

Table 2 shows means and standard deviations of subjects' scores on the recall test as a function of paragraphing, preview sentences and their learning ability.

Table 2
Means and Standard Deviations of Subjects' Scores on the Recall Test As a Function of Paragraphing, Preview Sentences and Their Learning Ability

Ability	Paragraphing	Preview Sentences		
		Without	With	
Good	No Paragraphing	M	18.50	18.50
		SD	4.65	3.11
	Paragraphing	M	14.80	16.00
		SD	3.70	4.55
Poor	No Paragraphing	M	8.00	12.75
		SD	3.37	2.75
	Paragraphing	M	15.75	17.67
		SD	4.72	4.16

A 2(paragraphing) * 2(preview sentences) * 2(learning ability) between subject analysis of variance was run. In result, there were significant effects; the main effects for paragraphing and preview sentences were not significant ($F(1,24)=1.37$, $p>.10$; $F(1,24)=2.02$, $p>.10$), but the main effect for ability was significant ($F(1,24)=6.08$, $p<.05$). That is, paragraphing or preview sentences did not affected recall of passage, whereas the learning ability of subjects affected recall of passage. Subjects with high learning ability recalled more idea units than subjects with low learning ability.

The second interaction, paragraphing * preview sentences * learning ability, was not significant ($F(1,24)=.53$, $p>.10$). The first interactions, paragraphing * preview sentences and preview sentences * learning ability, were not significant ($F(1,24)=.09$, $p>.10$; $F(1,24)=.98$, $p>.10$).

The interaction effect for paragraphing and learning ability was statistically significant ($F(1,24)=11.64$, $p<.01$). That is, the effect of paragraphing were different by learnig ability. Further analyses of this interaction indicated the followings. Subjects with high learning ability recalled well regardless of whether or not passage was paragraphed ($F(1,24)=2.69$, $p>.10$). However, subjects with low learning ability recalled more in paragraphing condition than no paragraphing condition ($F(1,24)=9.85$, $p<.01$). In paragraphing condition, subjects with low learning ability recalled as well as subjects with high learning ability ($F(1,24)=.44$, $p>.10$), but in no paragraphing condition, subjects with low learning ability recalled less than subjects with high learning ability ($F(1,24)=17.56$, $p<.01$).

DISCUSSION

The results of the present study suggest that text paragraphing affect recall of text differently depending on the learning ability of readers. In the present study, low learning ability students benefited from text paragraphing, whereas high learning ability students did not benefit from it. This result is congruous with previous research on the effect of phrase segmenting (Casteel, 1990; Kirby & Gordon, 1988; Mason & Kendall, 1979). It is possible good learning ability students have already the ability to segment unparagraphed text into meaningfully paragraphed units.

Preview sentences, however, did not affect recall of text regardless of the learning ability of readers.

Although there was a tendency that presence of preview sentences increased recall of text in low learning ability readers, it was not statistically significant. This result is somewhat contradictory to the results of previous research, which showed positive effect of preview sentences on recall of text (Dixon & Glover, 1990; Spyridakis & Standal, 1987). It is possible that the effect of preview sentences on recall of text in the previous research was confounded with that of paragraphing, because preview sentences were usually presented at the beginnings of paragraphs. It is also possible; that the effect of preview sentences is not as strong as that of paragraphing; and that the number of subjects in this study was too small to get the weak effect of preview sentences on recall of text.

Finally, the results of the present research showed that there is close relation between academic performance in college reading performance (recall of text, in this study). Although in this study the overall correlation between the academic performance and the recall of text was relatively low ($r=.21$), in the no paragraphing and preview sentences version the correlation between the academic performance and the recall of text was .80, and in the no paragraphing and no preview sentences version it was .59. (These results reflect the interaction between learning ability and paragraphing.) Several recent studies have suggested that reading comprehension could be used as an index predicting learning performance (Dreher & Singer, 1985; Royer, Marchant, III, Sinatra, Lovejoy, 1990). These results suggest that the text materials employed in this study, especially non-paragraphing versions, could be used as an index indicating both reading and academic learning ability. Incidentally, Kim & Lee (1992), in which the no paragraphing and no preview sentences version was used as a reading ability test, showed that the text version was efficient in classifying students into good and poor readers.

REFERENCES

- Britton, B. K., Glynn, S. M., Meyer, B. J. F., & Penland, M. J. (1982). Effects of text structure on use of cognitive capacity during reading. Journal of Educational Psychology, 74, 51-61.
- Casteel, C.A. (1990). Effects of chunked text-material on reading comprehension of high and low ability readers. Reading Improvement, 27, 269-275.
- Dixon, F.A. & Glover, J.A. (1990). Another look at number signals and preview sentences. Bulletin of Psychonomic Society, 28, 287-288.
- Dreher, M.J., & Singer, H. (1985). Predicting college

- success: Learning from text, background knowledge, attitude toward school, and the SAT as predictors. In J.A. Niles and R.V. Lalik (Eds.), Issues in literacy: A research perspective. Thirty-fourth Yearbook of the National Reading Conference. Rochester, NY: National Reading Conference.
- Frase, L.T. & Schwartz, B.J. (1979). Typographical cues that facilitate comprehension. Journal of Educational Psychology, 71, 197-206.
- Gernsbacher, M.A., Varner, K.R., & Faust, M.E. (1990). Investigation differences in general comprehension skill. Journal of Experimental Psychology: Learning, Memory, & Cognition, 16, 430-445.
- Keenan, S. A. (1984). Effects of chunking and line-length on reading efficiency. Visible Language, 18, 61-80.
- Kim, J-H., & Kim, S-J. (1990). Embedded headings and segmenting in text: Effects on recall. Korean Journal of Experimental and Cognitive Psychology, 2, 45-56.
- Kim, S-J., & Lee, M-Y. (1992). Comprehension skill and the efficiency of suppression mechanism in anaphoric reference. Proceedings from the fourth symposium on information processing of Korean alphabet and Korean language.
- Kirby, J.R. & Gordon, C.J. (1988). Text segmenting and comprehension: Effects of reading and information processing abilities. British Journal of Educational Psychology, 58, 287-300.
- MacDonald, N. H. (1983). The Unix-Writer's Workbench software: Rationale and design. The Bell System Technical Journal, 62, 1891-1908.
- Mason, J. M., & Kendall, J. R. (1979). Facilitating reading comprehension through text structure manipulation. Alberta Journal of Educational Research, 25, 68-76.
- Moon, C. (1979). Categorization of miscues arising from textual weakness. In D. Thackray (Ed.), Growth in reading(pp. 135-146). London: Ward Lock Educational.
- Raban, B. (1982). Text display effects on the fluency of young reader. Journal of Research in Reading, 18, 303-316.
- Royer, J.M., Marchant, III, H.G., Sinatra, G.M., & Lovejoy, D.A. (1990). The prediction of college course performance from reading comprehension performance: Evidence for general and specific prediction factors. American Educational Research Journal, 27, 158-179.
- Spyridakis, J. H., & Standal, T. C. (1986). Signals in expository prose: effects on reading. Reading Research Quarterly, 22, 285-298.
- Stark, H.A. (1988). What do paragraph markings do? Discourse Processes, 11, 275-303.