

AN EXPLORATORY STUDY OF THE USE OF ORGANIZATIONAL PATTERNS AS AN AID TO COMPREHENSION

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Printed materials, whether they be content textbooks or newspapers, are written in a variety of styles. Some use a narrative descriptive style of presentation, while others use many examples or illustrations to impart information, with others presenting a number of facts which must be interrelated to reach a solution. In studying content information, students of all ages frequently experience difficulty comprehending ideas as they decode the symbols. This difficulty may be due to many factors such as the readability level of the material, the vocabulary, lack of related background experiences or any number of other reasons.

One factor which is currently receiving more attention is that of the organization or structure of the text. In 1917, Thorndike (1917) suggested that one reason for failure in reading is the student's inability to organize and understand the organizational relationships in written materials. Later, Nila Banton Smith (1964) and James McCallister (1964) identified different patterns of writing which existed in various content areas and served as aids in understanding. Through the years, persons interested in the teaching of study skills have encouraged teachers to help students learn to look for the author's organization in a text in order to increase comprehension. These recommendations have been based more on common sense than research. However, current research in comprehension encourages further investigation.

Schema theory research findings suggest that individuals understand information based on their different backgrounds and the way they organize the information in their minds (Iran-Nejad, 1980; Bartlett, 1978; Taylor, 1980; Meyer, Brandt, and Bluth, 1980; Rumelhart, 1978). Major schema categories have been identified by different researchers as they investigate the organization of text materials using discourse analysis (Meyer, 1979; Kintch, 1977). However, these categories look at text organization from a writing or story structure rather than from the actual reading text structure as suggested by McCallister (1964), Niles (1974), Robinson (1978), and Shepherd (1982).

Cheek and Cheek (1983) reviewed middle and secondary content materials to determine the organizational patterns commonly used in text writing. The four patterns identified were enumeration, relationship, persuasive, and problem-solving. This study was designed to determine if instruction in the identification of these organizational patterns in content materials caused a significant change in comprehension scores on a standardized reading test. Specifically, the study:

- (a) explored a procedure for relating the identification of the four organizational patterns and comprehension to seventh graders' study of content materials, and
- (b) investigated the impact of this procedure on reading comprehension test scores.

METHOD

Subjects

The sample consisted of fifty-seven (57) students enrolled in two heterogeneously grouped seventh grade reading classes. Twenty-seven (27) students were in the section used as the control group and the remaining thirty (30) in the section used as the experimental group. Each group had a different teacher for the reading class.

Materials

Tests: The classes had been administered the *Iowa Silent Reading Test*, Level 1, Form F (1973), as a pre-test at the beginning of school. The study was conducted eight weeks into the school year. Therefore, parts of the same test and form of the test were used as a post-test measure at the end of the two week training period. The parts of the test used to measure comprehension were: Reading Comprehension, Part A; Reading Comprehension, Part B; and Directed Reading, Part B.

Part A of this test measures the student's ability to answer questions based on short passages to which he had ready access. Part B tests his ability to answer questions based on a longer, essay-type passage where short-term retention is required. On the Directed Reading, Part B, the student's skills in skimming and scanning an encyclopedia-type article for general impressions of content and specific information needed to answer particular questions are measured.

Texts: To teach the four organizational patterns, the students' content textbooks in social studies, science, mathematics, and language arts were used.

Procedures

The researcher conducted the instruction with the experimental group and the post-testing with both the experimental and control groups. The reading teacher for the experimental group observed in order to do follow-up instruction and work with the content teachers after this portion of the study was complete.

Using the four organizational patterns identified by Cheek and Cheek (1983 a), the students were involved with instruction in identifying and using these organizational patterns in their content materials for ten days, thirty minutes per day. The patterns were introduced in the order of frequency of use in the text materials with the enumeration pattern being first, then the relationship pattern, followed by the problem-solving pattern, and finally the persuasive pattern. The patterns were not introduced by name but rather as Pattern 1, 2, 3, and 4. An inductive procedure was used with passages taken from the texts, questions asked, and students led to see the existence of a pattern. Once students recognized the pattern by its function, they were led to give a name to the pattern. The only difference in the students' labeling and that of Cheek and Cheek (1983 b) was in Pattern 1 which they called an elaboration pattern as compared to Cheek and Cheek's name of enumeration pattern.

As a new pattern was introduced comparisons were made between the previously studied patterns and the new pattern. To help make the concept of organizational structure more concrete, students were provided duplicated copies of their text material to mark. Pattern 1 (enumeration pattern) was marked by circling the central thought and underlining information which expanded the idea. Pattern 2 (relationship pattern) was marked by underlining the two or more ideas which were related either by cause-effect relationships or comparison-contrast relationships. Pattern 3 (problem-solving pattern) involved the use of steps in problem solving with students following an outline of the steps proposed by Robinson (1978) and completing the outline as they read mathematics and science problems. For Pattern 4 (persuasive pattern) the students marked sentences which gave opinions and attempted to convince the reader about a topic.

As students were instructed in the recognition of the four organizational patterns, they were also informed about the importance of the different imbedded aids in recognizing patterns as well as remembering the information. Aids such as text headings, type size, signal words, and marginal notes were discussed with each pattern. Additionally, study questions provided at the beginning and end of the chapters were used to help the students establish purposes for reading. They were shown how their purposes for reading related to the way that the material is read—were they looking for details, comparisons,

opinions, etc.? This was further related to test taking skills by using sample test items from tests given by their content teachers and showing how the questions related to the information in the text and further how recognizing the organizational pattern in the text helped the students create questions which were similar to their test questions.

Following the ten days of instruction with the experimental group, the post-test was administered to both the experimental and control groups.

RESULTS

Table I provides the means and standard deviations for the two groups on each of the three subtests used as pre- and post-test measures. The planned comparisons were analyzed using a 2 x 3 analysis of variance (ANOVA), analysis of covariance (ANCOVA) and multivariate analysis of variance (MANOVA). The comparisons were investigating whether instruction in organizational patterns was significantly more effective than no specialized instruction in improving the students' ability to:

1. answer questions based on short passages,
2. answer questions on a longer, essay-type passage,
3. skim and scan material to answer specific questions, and
4. perform on any combination of the above subtests.

The analyses indicated that the instruction in organizational patterns was not statistically significantly different from the no-instruction condition on any of the three subtests of the *Iowa Silent Reading Test Level 1, Form F*. In comparing gains on short passage subtest, there was no significant difference between the experimental and control groups, $[F(1,56) = .41; p = .52]$. There was no significant difference between the gain scores of the experimental and control groups when responding to questions on longer-essay passages, $[F(1,56) = 1.94; p > .17]$. There were statistically insignificant differences on the gain scores between the two groups in their ability to skim and scan material to answer specific questions $[F(1,56) = .91; p > .34]$.

Using an ANCOVA to compare the raw scores of the two groups on each of the subtests, the following results were obtained. On the pre- and post-test scores of the subtest measuring responses to short passages, there was no significant differences between the two groups, $[F(1,56) = .46; p > .49]$. There were significant differences on the pre- and post-test scores of the two groups in responding to questions on longer-essay passages, $[F(1,56) = 2.19; p > .14]$. There was no significant difference between the groups in the pre- and post-test measuring skimming and scanning to locate specific information, $[F(1,56) = 1.78; p > .19]$. A MANOVA pooling the gains of the various subtests revealed no significant differences in scores. There were insignificant differences on the pre- and post-test gain scores of the two groups were all subtests were combined for each group, $[F(3,53) = 2.06; p > .11]$. A comparison of the gains when the subtest measuring responses to short passages and the subtest measuring longer-essay passages were pooled also indicated no significant difference, $[F(2,54) = 1.74; p > .19]$. When subtest scores measuring responses to short passages and measuring skimming and scanning skills were pooled, there were no significant differences in the two groups $[F(2,54) = .73; p > .48]$. The pooled results of the subtests measuring responses to longer-essay passages and that measuring skimming and scanning likewise yielded no significant differences, $[F(2,54) = 1.83; p > .17]$.

TABLE I
Means and Standard Deviations of Experimental and Control Groups on Various Subtests

Subtest	Experimental N = 30		Control N = 27		
	Pre	Post	Pre	Post	
A	\bar{X}	28.26	30.00	28.40	29.48
	SD	6.35	8.49	6.46	5.72
B	\bar{X}	8.36	9.06	6.74	8.44
	SD	2.05	2.49	2.47	1.39
C	\bar{X}	13.20	15.26	12.92	14.18
	SD	5.77	3.75	3.88	2.89
TOTAL	\bar{X}	49.8	54.3	48.0	52.1
	SD	14.17	14.73	12.81	10.01
TOTAL N = 57		Pre		Post	
	\bar{X}	49.0		53.3	
	SD	6.66		9.18	

DISCUSSION AND CONCLUSIONS

In light of the results of this study, one might conclude that the understanding of organizational patterns has no effect on comprehension. However, due to changes which students made in their study strategies and their approach to their content textbooks, organizational pattern instruction needs further investigation.

There are several variables that affected this study which must be addressed prior to further study.

1. The students were not randomly assigned to the experimental and control groups. Two sections of a heterogeneous seventh-grade class were used and each section had a different teacher. The attitudes of the classes towards the post-testing were quite different and tended to reflect the researchers perception of the atmosphere of the classes. The control group was quite conscientious during their testing time while the experimental group seemed less concerned. Using classes which had the same teacher or who were randomly assigned to the groups is necessary.
2. Three days prior to the conclusion of the instruction and the beginning of the post-tests, the school gave four days of achievement tests. The students appeared to be tired of tests and both groups seemed to reflect a negative attitude toward more tests.
3. Students' mean scores on the pre-test of the *Iowa Silent Reading Test* placed them in the high average range for the norming sample, thereby precluding little opportunity for these students to demonstrate extreme gains.
4. Other measurement procedures must be identified or developed to determine the students understanding of organizational patterns and these scores then related to changes in comprehension. A process dependent procedure should be developed to determine the students' knowledge of the process involved in identifying organizational patterns.
5. The instructional program should be integrated into the content classes rather than taught as a separate and isolated unit in the reading class. A longitudinal study of at least a year is needed to determine the impact of this knowledge on content learning.
6. From the verbal responses of the students in the experimental group, there is every reason to believe that the use of these patterns could become a habit if the reading and content teachers arranged their curricula accordingly.
7. Because the results on the subtest measuring the reading

of longer-essay passages without the benefit of questions prior to reading was closer to significance than the other subtests scores which provided questions which could be viewed prior to reading, study should be made as to the helpfulness of advance questions in determining the pattern organization of a selection.

Although comprehension scores on a standardized reading test indicated no significant differences for students receiving instructional in using organizational patterns to aid comprehension, the verbal feedback from the students and teachers suggest that changes in study behavior did occur. Thus, further investigation is warranted.

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