The University of Southern Mississippi

THE EFFECTS OF THINKING MAPS ON READING SCORES OF TRADITIONAL AND NONTRADITIONAL COLLEGE STUDENTS

by

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CHAPTER V

SUMMARY

The purpose of this study was to analyze the effects on test scores of using Thinking Maps in conjunction with the regularly prescribed curriculum in reading classes. It was necessary to establish the status of the students as traditional/nontraditional so that analysis could be made to assess differences in test scores because of status. A further investigation was made to determine any differences in test scores which might occur when treatment (mapping/no mapping) interacted with status(traditional/nontraditional).

Summary of Procedures

The classes for the study were randomly selected from reading classes, morning and afternoon sessions, in a community college for the fall semester 1997 and the spring semester 1998 to secure an adequate sampling of 92 students. Two groups were set up--one that received mapping consisting of 51 students, and the other group that did not receive mapping consisting of 41 students. The study was set up to determine if mapping would have a significant effect on posttest reading scores. A student questionnaire yielded

information on the status of the participants. Forty-four were classified as traditional and 48 as nontraditional.

Thinking Maps, a thinking skills program based on eight fundamental thinking processes represented and activated by semantic maps, were used as tools of learning. The maps were employed to describe qualities and distinguish characteristics, compare/contrast, classify and relate main ideas and supporting points, analyze structure, develop whole-part relationships, show cause and effect, distinguish sequences and patterns, and form analogies.

The instruction for both the experimental and control groups was as identical as possible for the 2 semesters except that mapping was added to the curriculum for the experimental group. At the beginning of the two semesters, the Stanford Diagnostic Reading Test (SDRT), Blue Level, Form G, was given to the two groups. At the end of the semesters the SDRT, Blue Level, Form H, was administered to the two groups. The SDRT provides information on a student's skills in reading comprehension, vocabulary, phonics, structure, fast reading, scanning, and word parts.

The data obtained were analyzed to determine if mapping would result in a significant difference in posttest reading scores. Further analyses were made to ascertain if a difference occurred when status was considered and if there

were an interaction between treatment and status. Determination was also made on which variables of fast reading, phonics, comprehension, scanning, structure, vocabulary, and word parts the mapping/no mapping groups differed. The .01 level of significance was used for testing the hypotheses.

Necessary calculations were made using the multivariate analysis of covariance (MANCOVA) using the Wilk's lambda criterion. Follow-up univariate analyses were utilized to clarify any significant multivariate results.

Summary of Findings and Conclusions

Statistically significant main effects were found for treatment ($p \leq .01$). There were no significant main effects for status, nor was there a significant interaction between treatment (mapping/no mapping) and status (traditional/nontraditional). Significant differences at the .01 level were found for the five subtests of fast reading, comprehension, structure, vocabulary, and word parts. The mapping group outperformed the no mapping group on each of the five variables. No statistically significant difference was found for the remaining variables of phonics and scanning. However, it may be pointed out that Thinking Maps do not include phonics and scanning as components of the program.

The findings of the univariate treatment by status analysis of covariance were consistent with the results of the multivariate analysis which found only the main effects for treatment were statistically significant. No statistically significant effects were found for status, nor was interaction between treatment and status statistically significant. The means of the mapping group were higher than the no mapping group for both subtests and totals.

It may be concluded that mapping made a significant difference on test scores. Whether a person is characterized by age, social roles assumed, or other criteria as traditional or nontraditional made no significant impact on the reading test scores.

Discussion

The concern over how college reading courses can produce more satisfactory results has been minimized by the findings of this study. As early as 1928, Thorndike interpreted reading as involvement in creating and thinking. The role of the teacher is not so much communicating facts and information as teaching perspectives (Meyers, 1986). It has been suggested by Kazemek (1984) that it would be better to think of reading instruction for the nontraditional student as a dialogic process in which one adult helps another to do what one wants and needs to do.

Opinions differ as to the most efficient technique in teaching reading. Piaget (1972) did most of his work among children, but he has laid the foundation of working with adults and, as Dewey did earlier, has contributed the notion that learning through activity is a preferable method. Harmon (1987) has documented the inappropriateness of much of the materials, strategies, and procedures employed in college reading courses.

One of the most encouraging trends in reading programs is the employment of thinking skills with a growing interest in developing instructional strategies to improve critical thinking skills of students. Reading improvement can result from the development and use of thinking skills (Brandt, 1990). Research by Cronin et al. (1990) supports the contention that graphic organizers lead to higher scores on reading tests. As students use graphics in networking information and constructing knowledge, they are empowered to shift from passive to interactive learning.

Thinking Maps is based on a metaphor of connectivism proposing a new paradigm of knowing/thinking which synthesizes personal experiences of individuals within interpersonal and social connections in construction of new knowledge. Because the components of Thinking Maps were closely correlated with the objectives of the reading course

at the site of the study, they were helpful in the instructional strategies used at the college. To date, there have been no published reports of the use of Thinking Maps on any other college site. Much has been said about the differences in traditional and nontraditional college students, but this study finds no significant statistical differences existing. It appears that age and social roles do not significantly affect a college student if he or she is committed to achieving full potential.

A strength of the study is that since there was only one instructor, no confounding variable of teacher ability existed. However, unknown biases on the part of the instructor may have influenced the results.

Comments made by some of the students enrolled in the course where the maps were used are presented below:

"May I take these home to my children?"

"Why didn't we learn these in elementary school?"

"I was failing economics at midterm. When I used the Tree Map to classify the information, my grades began to get better. My final grade in economics was an 'A.'"

"The Thinking Maps allow me to see what I'm thinking and then reflect on what I thought."

"Thinking Maps are the best strategy I have ever used to organize and help me recall information."

These comments, supported by statistical analysis which shows Thinking Maps significantly affect test scores, indicate the personal satisfaction the mapping strategy provides.

Recommendations

Based upon the findings of this study, the following recommendations are offered:

1. Since the strategy of mapping produced significantly higher reading test scores and resulted in positive comments of personal satisfaction from the participants of the study, it is recommended that the Thinking Maps program become a component of the prescribed curriculum of reading classes.

2. Since the ultimate aim of teaching is to help develop independent learners, Thinking Maps appear to provide a tool needed for improvement of metacognitive skills. For lifelong learning, for adult learners, for any student, the connecting of one's personal and social world and the recognizing of the value of one's experiential background and needs are addressed by this thinking skills program. It is suggested that consideration be given to the inclusion of mapping wherever the learning process is taking place.

3. It is recommended that college reading teachers be given the opportunity to receive Thinking Maps training and information on current brain research to broaden their understanding of the justification for common visual tools for thinking.

4. It is recommended that reading teachers engage in dialogue with colleagues regarding how the Thinking Maps tools can be applied across curriculum for both traditional and nontraditional students.

5. The present study has also identified areas which merit further investigation. Specifically, the following recommendations for further research are offered: (a) This study should be replicated in other junior and community colleges and in 4-year colleges and universities where reading and study skills courses are offered; (b) Studies using the Thinking Maps should be conducted with other adult populations, including Adult Basic Education students, GED students, nursing student programs, military personnel programs, and business and vocational trainee programs; and (c) A study should be conducted using a control group, a group using Thinking Maps, and a group using some other innovative concept to test for a "halo" effect of the Thinking Maps program.