1984

A review of evidence on the effect of teaching content area reading on student achievement

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Abstract

Quality of education is an issue of primary concern in the United States today. Accusations that children are graduating with inadequate academic skills have been frequent. Concern has been expressed regarding declining SAT scores, and there has been a general outcry for the establishment of minimum standards for both high school and college graduation. The necessity for students to acquire a solid education currently ranks as a high individual and social priority (Criscuolo, Vacca, & LaVorgna, 1980).

A REVIEW OF EVIDENCE ON THE EFFECT OF TEACHING CONTENT AREA READING ON STUDENT ACHIEVEMENT

A Research Paper

Submitted to

The Department of Curriculum and Instruction

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts in Education

UNIVERSITY OF NORTHERN IOWA

by

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September 1984

This Research Paper by: Debra Takatsuka

Entitled: A REVIEW OF EVIDENCE ON THE EFFECT OF TEACHING CONTENT AREA READING ON STUDENT ACHIEVEMENT

has been approved as meeting the research paper requirement for the Degree of Master of Arts in Education

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CHAPTER I

INTRODUCTION

Introduction to the Problem

Quality of education is an issue of primary concern in the United States today. Accusations that children are graduating with inadequate academic skills have been frequent. Concern has been expressed regarding declining SAT scores, and there has been a general outcry for the establishment of minimum standards for both high school and college graduation. The necessity for students to acquire a solid education currently ranks as a high individual and social priority (Criscuolo, Vacca, & LaVorgna, 1980).

It is estimated that as much as 75% of all that is learned at the secondary level is acquired through reading (Fay, 1956; McDonald, 1971). In essence, every academic subject is dependent on reading as the primary method to disperse information. Therefore, reading is the "common denominator" of learning in the secondary schools (Culp, 1979). Consequently, it would seem logical that improving reading competency and efficiency would result in remediation of many of the academic concerns now being voiced.

In the past several years, reading as a basic skill has changed rather dramatically. In his article analyzing reading in the 1970s, Petre points out that the reading demands on the U.S. citizen are much different than they were even a few decades ago.

The average citizen now must deal with new and more complex reading materials. This is a direct result of the technological advances that have occurred. Our vocabulary and the content of what we read has become decidedly more specialized. In addition, with the advent of the "multimedia," there is actually less need for printed material. So on the one hand, there exists an increased and specialized need; and on the other, less required occasion to implement it (Petre, 1972).

It would appear that we must address two long and predominant myths as an explanation for the resistance to reading instruction in the secondary classroom. These myths are: (1) Reading instruction should take place only in the elementary grades, and (2) only those student who have reading problems need help (Toback, 1976).

Regarding the first myth, it is rapidly being recognized that the development of reading skills past the elementary level is critical for success in the junior and senior high schools and that teachers must address this issue. Reading is still central to the learning process at the secondary level. In addition, it has been pointed out that failing to take preventive action in the secondary schools has lead to the necessity for corrective measures, which are both difficult and costly (Schleich, 1971).

Fifteen years ago, teachers were indicating that they were aware of reading deficiencies in their content area students. A survey involving 387 high school teachers in Southern Illinois

reported that 80% of the content area teachers felt that their students needed reading instruction in overall reading skills, and they believed the students were especially weak in the areas of thinking skills and technical vocabulary. Only 15% of these same teachers, however, made special provisions for reading instruction in their daily classroom activities (Jackson, 1979). It would appear that such provisions were definitely warranted.

Relative to the second myth, it has been argued that just general reading proficiency is not enough at the high school level, but rather that a technical vocabulary and special skills are required in each of the content areas (Strang, 1966). This conclusion indicates that even extremely competent readers require additional skill development in content areas. These two myths have interfered and restrained full development of secondary reading programs even when the need has been established.

New concepts and theories have been developed which indicate the potential for reading instruction at the secondary level. A viewpoint that has been currently illustrated by Readence, Baldwin, and Dishner (1979) is the concept of "teachable moment." This concept involves the idea that such moments occur for students when reading-related skills can be taught within the context of meaningful subject matter. Such moments are the ideal time to utilize reading skill development since the need and motivation is already present.

As a result of this need and new information, many instructional alternatives have been proposed and explored to initiate and promote better skill development in reading. One of the primary focuses has been on emphasizing the developmental reading process in all subject areas; hence, considerable literature has developed in content area reading instruction. Since the utilization of reading skills is so obvious in the content areas, this would seem like a justifiable approach.

Statement of the Problem

A great deal of research appears to have been done in several areas related to the teaching of content area reading skills. Specifically, three general areas related to content area reading have been extensively investigated. These three areas are:

1. Teacher attitude, existing knowledge, and degree of utilization of content area reading skills (Braam & Roehm, 1964; Braam & Walker, 1973; Criscuolo, Vacca, & LaVorgna, 1980; Gehrke, 1982; O'Rourke, 1980; Schleich, 1971; Vaughan, 1977; Wolf & Greenwald, 1978).
2. Content area reading program implementation into a system (Askov & Dupuis, 1978; Axelrod, 1975; Bader, 1972; Palmer, 1975; Shepherd, 1979; Strang, 1966).
3. Specific skills improvement through the teaching of content area reading skills (Alvermann, 1982; Carver & Hoffman, 1981; Cohen, 1975; Criscuolo, 1976; Katrein,

Steed, & Waldner, 1971; Shoop, 1982; Thomas, Augstein, & Farnes, 1972).

These studies have described and characterized the relative benefits of teaching content area reading skills to increase reading development. However, there is an even more basic empirical question that needs to be addressed and investigated. Content area reading is, by definition, the teaching of reading skills in the content area. It seems not only appropriate, but vital, that it is first assured that in promoting such a program there are indeed benefits to the content area reading teacher. If there is not, then one would be hard pressed to convince such teachers to put their class time and out-of-class energies into implementing such programs. It must be remembered that they have limited amounts of time in which to cover certain knowledge areas and skills that are very specifically related to their content areas.

Russell (1974) addresses this very issue in his article, "A Crucial Problem Facing Secondary Education." He alludes to the fact that numerous secondary schools have recently directed a great deal of their emphasis and monies to the correction of reading problems. A major emphasis has been on the teaching of reading in the content areas. Russell asks the basic question, "Can reading be taught in the content areas?" (p. 601). He seriously doubts the feasibility of this venture. He asserts that it is relatively easy to teach students how to study the content,

how to use the text, how to skim, scan, and adjust reading rate; but, he argues, all of these skills presuppose reading ability. Hence, in order for the student to apply these skills, they must first be able to read. As Russell puts it, "reading must no longer be a process but a tool" (p. 601). He adds that learning to read and learning to read content are not synonymous. He concludes that students can be taught reading or they can be taught subject matter, but not simultaneously without sacrificing the integrity of content.

Shepherd, in direct contrast to this view, in his article, "Reading in the Content Areas: Instruction and Application" (1968), argues that "Reading should be taught in the content areas no one would deny" (p. 1). He asserts that this concept is too logically and fundamentally sound. Shepherd contends that most educators would agree that teaching reading in the content areas is a basic part of a total school program. He adds however, that despite this contention, after approximately 30 years of investigation we have not been able to break beyond the general passive acceptance of this idea.

What then do the empirical investigations that have been done tell us? Is the teaching of reading in the content areas a viable approach for the content area teacher relative to improving the overall achievement of their students in that subject area? If the teaching of content area reading skills is definitely an asset in accomplishing individual subject area goals and objectives,

then implementation is quite probably a foregone conclusion. If indeed the research supports the concept, then Russell's contentions may be discarded. The argument which motivates content areas teachers to incorporate strategies for reading development is that these strategies do indeed foster desired conceptual development as well as general reading skill development. What empirical evidence supports this claim? The purpose of this paper, then, is to determine if the teaching of content area reading skills increases content area achievement.

Definition of Terms

Herber, in his text Teaching Reading in the Content Areas (1978), felt that the best way to define teaching reading in the content areas was to compare the responsibilities and focus of the reading teacher to the content teacher. Each, he felt, has a specific set of responsibilities and a curriculum to teach. The reading teacher's curriculum consists of a set of reading skills. These are taught in some sort of predetermined sequence, based on the assessment of students' needs. Individualization occurs relative to the point in the sequence being taught and the sophistication in teaching the skill. In teaching this set of reading skills, the teacher indeed hopes to develop students' ability to increase their interests and understanding of the world around them, but the primary goal and responsibility is to teach those predetermined skills. Hence, the reading teacher is not

teaching content as such, but, rather, an understanding of the processes being applied to a variety of materials.

In contrast to that, the content area teacher who utilizes content area reading skill development is not primarily concerned with the reading skills students must use in reading materials but instead in teaching the students how to acquire the information and concepts from assigned selections. The main reason for the reading assignments is not to promote reading skill development per se, but rather the understanding of the materials to the point where concept development in the content area is facilitated. Reading skills are not taught for their own sake, but rather as a tool to further content understanding. As Herber puts it, "the skills are developed functionally, not directly" (p. 8). The focus is entirely different from that of a reading teacher. Consequently, the skills promoted also have a different emphasis.

For the purpose of this investigation into the effectiveness of teaching reading in the content area to increase content area achievement, it may be useful to organize the content reading strategies into three groups: (1) provisions for text selection, readability, individualization (multitext), and alternate activities; (2) teaching activities which prepare the student for reading or provide structure (e.g., preteaching vocabulary, establishing prior knowledge, structured overviews, advance organizers); and (3) teaching activities which model reading and study behavior and lead toward independence in those behaviors

(e.g., previewing, vocabulary in context, levels of comprehension, categorizing and mapping, notetaking).

It is beneficial to view the related empirical investigations in light of this listing of categories, especially since achievement may vary according to the type of strategy and/or activity used.

CHAPTER II

REVIEW OF LITERATURE

Introduction to the Literature Review

The teaching of content area reading skills has long been proposed as a viable manner in which to address the issue of developmental reading at the secondary level. A great deal of empirical research has been done relative to teacher utilization of such skills and their overall effect on general reading achievement.

Russell (1974), however, proposes that reading can indeed not be taught in the content areas. That which is being taught relative to the content area in reading presupposes that first the student can read. He contends that you may either teach subject matter, or reading skills related to subject matter, but not both simultaneously. It should be noted here, that it is entirely possible that Russell is referring to concept-oriented reading skills as being the most difficult area to facilitate through the use of content area reading skill development with students who read very poorly.

Shepherd (1968) asserts that the teaching of reading in the content areas is an extremely viable approach to both increasing overall reading achievement and content achievement. However, he does add that a great deal more investigation is warranted so that educators go beyond just a passive acceptance of the notion and

begin to understand the full possiblities related to content area reading as an academic option.

What does the literature tell us about content area reading, specifically as it relates to assisting the subject area teacher in transferring their subject area skills and knowledge to their students? Is the teaching of content area reading skills a viable approach to increasing student achievement in those content area classes where it is implemented?

In terms of the research that has been done, strategies used in the teaching of reading in the content areas can be divided into three categories: (1) provisions for text selection, readability, individualization (multitext), alternative activities, etc., (2) teaching activities that prepare students for reading and provide structure (e.g., preteaching vocabulary, establishing prior knowledge, structured overviews, advance organizers, etc.), and (3) teaching activities which model reading behavior and lead toward independence in those behaviors (e.g., previewing, vocabulary in context, levels of comprehension, categorizing and mapping, notetaking, etc.). This is a useful way to organize the review of literature relative to content area strategies. It is, also, highly possible that achievement will vary according to the type of strategy and activities used. In order to determine increased achievement in the content area, increased grade point averages, tests scores, and teachers' general assessments are employed in the studies reviewed.

Review of Literature - Instructional Decisions

Regarding the first category of content reading strategies which involves provision for text selection, readability, individualization (multitext), and alternative activities, two studies that dealt with readability levels of texts and content area achievement should be noted.

Wright (1980) studied the effect of reduced readability text materials on comprehension and biology achievement. Her sample population included 265 high school students from two different high schools. She employed two levels of comprehension groups, adequate and inadequate. This determination was based on student scores on cloze tests from the original text. There were also two control groups, one with and one without adequate comprehension. Each of the experimental students received rewritten chapters approximately at the sixth-grade level as determined by Fry's Readability Graph. Students used the issued materials, rather than their regular text, for 4 weeks. No other changes in instructional practices or materials were utilized. At the end of the 4-week period, biology achievement was determined by scores on unit tests, designed by the teachers and the researcher. The major finding was that biology achievement was not significantly changed when students used reduced readability material, instead of the assigned textbook.

In his article, "Reading Assignments Across the Curriculum," Farren (1982) investigated the issue of readability and

achievement in the content areas by analyzing several other composite studies. He concluded that present findings seem to indicate that many students do learn less from lowered reading level materials than they would have with a regular text.

In a study done by Landis, Jones, and Kennedy (1973), an alternative activities approach was analyzed. They were concerned that the material students read in a reading classroom differed greatly from that found in the content areas. There were a substantial number of students failing required courses in English, math, and science in the freshman class at this particular school. Their failure had been attributed to low reading ability and the subsequent inability to learn from the textbook assignments. These students were of low average academic ability, but they had normal vision, auditory, motor abilities and adequate social and emotional adjustments.

They designed a program that would present the content of the problem content area classes (English, math, science) through a modified approach of audio, visual, and kinesthetic instructional modalities. Content area teachers structured the skills and knowledge of their courses in these terms. In addition, a program of reading improvement was initiated to parallel the special instructional program.

Results were monitored for 5 years. An improvement in attitude relative to academics was noted and the students appeared more relaxed as a group in the academic setting. The students

were passing their content area courses even though these courses were not "watered down" versions of the regular curriculum. The difference was in presentation only. Improved self images were also noted and students were more willing to engage themselves in "high risk" activities than they would have done prior to the experiment. It was concluded, in general, that academic achievement could be promoted for such students if they are supplied alternative approaches to content materials. This is a rather unorthodox method with which to teach content area reading skills, but nevertheless appears effective.

Review of Literature - Instructional Strategies

Relative to the second category of content reading strategies which involves teaching activities which prepare students for reading and/or provide structure, the effect of adjunct questions on high school low achievers' reading comprehension interested Graves and Clark (1981). Their study investigated the effect of adjunct questions on the reading comprehension of 182 high school low achievers. Subjects received one of three treatments with an easy or difficult version of a prose passage. One group was treated with 10 text-dependent, literal questions inserted at 200-word intervals in the passage. The second group received these 10 questions following the passage. A control group received no questions.

The results indicated that interspersed questions produced significantly greater results than final questions or no questions

at all. In addition, final questions produced significantly greater results than no questions at all. Their final conclusion was that adjunct questions are beneficial with less able students.

A study by Dea (1978) did result in some conclusive evidence in favor of teaching reading in the content area in order to augment increased achievement in the content area. Dea employed the use and nonuse of vocabulary recognition materials for difficult words to study the possible effect of such material on test scores. Her sample included eighth-grade history classes with a sample total of 80 students. Vocabulary recognition materials were used to supplement four chapters of the history text. Four chapters not supplemented by vocabulary materials served as control chapters.

Test scores for the experimental chapters were compared to the test scores for the control chapters and the results were that not only were the test scores of the experimental chapters with vocabulary materials higher, but *t*-test computations of the overall differences were significant at the .01 level of statistical significance. Dea concluded that vocabulary recognition helps to improve content area reading and overall achievement. She concluded that teachers should determine the reading levels of their students and the text and attempt to reconcile reading level differences through the direct teaching of difficult vocabulary within the text.

An investigation into the differential effect of organizational aids on concept acquisition and retention of meaningful verbal materials was done by Rosso (1980). Her purpose was to determine if such organizational aids were indeed beneficial. Two organizational aids were developed, one in prose form and one in question form. Each organizer contained a generalized synopsis of an accompanying 2,500-word learning passage. Rosso hypothesized that an organizer, placed either prior to or directly after the learning passage, would benefit the treatment groups. Also, there was an attempt to take into consideration such factors as I.Q. levels, reading comprehension levels, retention levels, and whether feedback was utilized.

The sample included 10 11th-grade social studies classes from three high schools. The method of assessment was a 32-question multiple-choice test.

The results indicated that although some differential beneficial effects were obtained by all the organizer groups compared with the control groups, the factorial analysis of covariance yielded no significant differences. Rosso felt that this might be due, in part, to insufficient emphasis of the organizers; their initial impact upon cognitive structure being minimized by their attachment to the learning passages. Retention set and internal sequential organization of the learning materials may have had a leveling effect, according to Rosso. She recommended that further study with organizational aids be done

and that this be done in two distinct ways. First, attention should be drawn specifically to the generalizations and concepts contained in the organizers and, secondly, that each of the specific organizers be tested separately to see which produced the most significant results.

Croyle (1980) investigated the effect of three types of expository organizers in the area of social studies at the middle school level. He was interested in determining if three different kinds of expository advance organizers would facilitate the verbal learning and, in addition, attempted to determine the faciltative effect of expository advance organizers over time. The subject population consisted of 80 seventh graders. The study involved four sections of social studies classes in which there were 10 high reading ability and 10 low reading ability students. Four individual units within the social studies curriculum were utilized. Each section of students received the same treatment on all four units and each was followed by a posttest. Students in section 1 received an abstract expository advance organizer reading passage, learning passage, and 25-item posttest. Section 2 received a detailed expository advance organizer reading passage, learning passage, and 25-item posttest. Section 3 received a simulation game/activity expository advance organizer, learning passage, and 25-item posttest. Section 4 received a learning passage and a 25-item posttest. This was the control group.

The results indicated that each of the advance organizer treatment groups outperformed the control group. Also, there was no specific type of advance organizer which facilitated learning to a greater degree than the rest. Specifically, it appeared that students of low reading ability could benefit the most from such specially prepared advance organizer materials and the simulation activities gave them an effective alternative method for learning the social studies materials.

Review of Literature-Instructional Models

Teaching activities which model reading and study behaviors and lead toward independence in those behaviors (e.g., previewing, vocabulary in context, levels of comprehension, categorizing and mapping, and notetaking) are the third category of reading content strategies. Relative to this category, a study by Colwell (1980) involved an investigation into the use of a direct-functional study skill technique and its effect on achievement in seventh-grade social studies classes. Specifically, the purpose of this study was to determine the effectiveness of a direct-functional study skills strategy in relation to identifying paragraph patterns, developing interpretive comprehension, and improving content acquisition. The sample included 68 seventh graders from selected social studies classes. These students were from two different schools. They were split into two treatment groups of equal proportions. Treatment A involved a Directed Reading Activity approach while treatment B incorporated the experimental

direct-functional method. Each sample group had students at high, average, and low achievment levels.

The overall conclusions were that the direct-functional approach was beneficial in terms of helping ease the transition from basal reading to the more expository content material. The average achievement level subjects seemed to benefit the most in terms of achievement. He felt that with the higher level achievers one could argue that they would have succeeded just as well without the treatment. For the low achievers, any text-dependent study skills technique may be lessened because of the difficulty of the book. His final conclusion was that this study emphasized the need for multilevel texts within a content class.

Tomlinson and Tomlinson (1975), in order to help college students in their transition to college level work in biology and increase achievement in that field, developed a course that focused on the methods and materials of the introductory course in biology and attempted to increase students' skill foundations for future transfer to independent science study. The population included students who attended the course on a no credit, voluntary basis, 3 times a week for 8 weeks.

An initial study completed during the 1974-75 academic year indicated a significant achievement by the experimental class. A further study in the fall of 1975 indicated that courses that integrate the teaching of reading and study skills with content

materials may very well be an effective method to aid in increasing freshman achievement.

The effect of increased reading efficiency upon semester grade point averages was investigated by Belcher (1971). Belcher's hypothesis was that increased reading efficiency would result in, and contribute to, the improvement of student grades. The population consisted of two groups of college students who had enrolled voluntarily into one of two sections of a course designed to increase the individual's effective reading rate as computed by words per minute multipled by the percent of comprehension. A secondary goal was to help each student develop or improve their study habits. The two groups of 14 males and 16 females in one group and 4 males and 7 females in the other. Each met two hours daily for 4 weeks.

The Nelson-Denny Reading Test was used as a pretest to determine the initial Estimated Reading Rate (e.r.r.) for each participant. An alternate form of the same test was used for the posttest. Controlled readers were utilized to promote increased reading efficiency.

The results indicated that the students in the first section of the course did indeed increase their reading rate (mean e.r.r. increased from 205 to 526). The students in the second section also increased their reading rate from a mean e.r.r. of 169-477. Both were significant at the .01 level.

The fall and spring GPAs for the second groups were significantly higher at the .05 level compared to a control group. The first group did not experience a significant change in GPAs from the fall to the spring semester. The two experimental groups and the control group were again compared in the spring of 1970, but no significant differences were noted.

At the high school level, Glock and Millman (1962) investigated the effectiveness of a study skills program for above average high school pupils. Their purpose was to determine the immediate and long-term effectiveness of an instructional program designed to help above-average high school juniors develop skills in reading, writing, listening, and study methods. Students in the control group attended regular English classes each day of the week, whereas those in the experimental group attended regular classes only 3 days per week and participated in the study-skills program the other 2 days. The study-skills program consisted of instruction in reading, vocabulary development, listening, and notetaking. Additional activities included practice in rapid reading, skimming, determining the organizational pattern, summarizing, differentiating between details and main ideas, and determining the tone and intent.

The sample consisted of 82 above-average juniors. Of this group, 62 were honor students with 41 of them randomly selected. The remaining 21 honor students, together with 20 good, but not honor students received the regular instruction in English. The

groups were equated in terms of sex and intelligence factors. Achievement tests scores and school grades were recorded during the 3 years of investigation.

It was predicted that training in study skills would help students with all of their content course achievement and result in higher grade averages for the experimental group. Since the investigation followed students' progress into college (3-year study), it was assumed that achievement would especially be noted at that point.

The results indicated that, in terms of reading efficiency, the experimental group was significantly faster than the control group, even at the end of the first year of college. In terms of superiority of study habits which the experimental group had illustrated during the high school phase, these were not evident by the time they had completed their first year of college. The overall conclusion was that this study did not support required study-skill courses for students earning above average grades in high school but that volunteer study courses for college students could be beneficial when motivation is high. Achievement appeared to be a very individual process rather than group-oriented.

At the college level, the relationship between study skills reinforcement and academic performance of underachieving science majors was explored by Hawkins and Bartlett (1978). They employed a sample of 50 college students to determine the extent to which

content area study skills programs influenced the attrition rate and grade point averages of health science students whose performance, up until then, was marginal.

Two experimental study programs were developed, with one lasting a semester and the other a 5-week minicourse. In all other respects, these groups were the same. With regard to the semester course in study skills related specifically to the sciences, the attrition rate was lower than that of the matched control group. There was, however, no significant difference in the grade point averages for the two groups. With the minicourse in science-related study skills, the grade point averages were not significantly higher than their averages before the courses. The general conclusion was that marginal students require more than a one-semester study skills course in order to improve grade-point averages.

Pauk (1965) also had looked at study skills and scholastic achievement. Two distinct experiments were carried out separately at Cornell University. One experiment included a course composed of specially designed study skills, and the other was a specific study skils course combined with a reading element. For the first experiment, 61 pairs of college students were matched by sex, year in school, college within the University, and Scholastic Aptitude Test total scores. This group met for 50-minute lectures twice a week for 3 weeks. Topics included: (a) how to read a textbook, (b) how to mark a textbook, (c) how to take notes on a lecture,

(d) how to make best use of time, (e) how to write a research paper, (f) how to be academically aggressive, (g) how to become academically involved, (h) how to study for examinations, and (i) how to take examinations. The lecture topics and materials were based on the text.

All lectures were given during the latter part of the fall semester so that the students were then ready to apply the study skills learned during the entire spring semester. The variations between fall and spring grade averages served as the dependent variable. Obviously, the control group received no such instruction.

In the second experiment, 153 pairs of students were matched. None of these students were included in the first experiment. This group also met for 50-minute lectures on study skills twice a week. But, in addition, this group received instruction and practice with: (a) reading comprehension skills, (b) rapid reading, (c) the tachistoscope, perceptoscope, and rapid reading films. They also spent 2 additional hours per week practicing rapid reading on reading accelerators.

The results of the first experiment showed a net increase of 3.43 points from first to second semester grade-point averages over the control group. This was significant at the .01 level. In the second experiment, a net mean increase of 2.75 was noted over the control group. This was significant at the .05 level.

In order to interpret these increases accurately, one must realize the uniqueness of the Cornell grading system which confines the majority of academic grades to a relatively narrow band. Approximately 97.6% of the cumulative grade-point averages of the freshman class fell at 89 or below, 54.3% were between 70 - 79, and 32.5% were between 75 - 79. Therefore, two students in a class of this size, one with an original grade-point average of 75 and one with an average of 78.43 would be approximately 51.2 ranks or 22 percentile rank units apart.

It was concluded that the course in study skills contributed to the greater gain in scholastic grades. Pauk felt that the teaching of study skills might help improve reading, and in addition, produce improvement in the academic achievement of the students.

In a final study analyzing a staff-development training program in reading and social studies at the high school level, Diem (1980) facilitated strategies that cut across all three of the reading content strategy categories. A reading test administered to a sample group of high school students had indicated inferior reading skill development and supported the teachers' contentions that their students could not master social studies materials because they could not read them. To remediate this problem, the content area teachers were trained in functional reading skills and in specific content area skills relative to

reading. Twelve high school and 9 middle grade teachers participated in the program.

The program included an intensive 1-week preschool workshop in which prescriptive and diagnostic tools in reading and the social studies were introduced. The program also included bi-monthly meetings and classroom observations. Materials were also developed in social studies at appropriate grade levels.

The results indicated that student performance in functional reading skills can be increased when teachers are trained in these skills. Along with that, the assumption was made that subsequent achievement in the content area would follow. It was highly recommended, however, that more intensive content area methodological instruction is needed beyond basic inservice.

Summary

The teaching of reading in the content areas and how it affects overall content achievement was investigated through a review of the literature. It was discovered that such empirical studies were extremely difficult to locate. The results, as a whole, were inconclusive.

Generally, indirect rather than direct approaches were employed in the studies to ascertain content area achievement. For example, grade-point averages and test scores were the primary indicators of content area achievement; and, usually, achievement in reading was emphasized over achievement in the content area

with the assumption being made that increased reading performance would be followed by increased achievement in the content area.

This review indicates that few studies have examined this question directly and the affect of teaching of content area reading skills on general academic achievement has not been established. An analysis of the individual studies is made in the following chapter.

CHAPTER III

SUMMARY AND CONCLUSIONS

Introduction to the Summary

Teaching reading in the content areas is one solution presently being suggested to help remediate the problems that presently exist relative to developmental reading achievement. At face value, this approach seems to be logical and justifiable. It involves the expansion of students' reading skills into the specialized content areas and incorporates legitimate and contemporary materials from which to teach. The need to learn the material is immediate and the skill development seems extremely applicable.

The purpose of this literature review was to determine if the assumption that the teaching of reading in the content areas increases content achievement is valid. What empirical research has been done to support this assumption? Specifically, does the teaching of content area reading skills contribute significantly to overall subject area achievement? If it does, then the assumption is merited. If it does not, then further study and investigation of an empirical nature is warranted.

Summary of the Literature Review

Studies that directly investigate the empirical question of whether or not the teaching of content area reading skills results in increased content area achievement are extremely difficult to find. Often achievement in the content area is secondary to

general reading achievement. It seems to simply be assumed that any increased achievement in reading will automatically result in increased content area achievement. However, as Russell (1974) contends this is actually not a foregone conclusion, since he proposes that teaching content area reading skills and teaching reading are two completely distinct entities. Shepherd (1968) disagrees, but does feel that more research is indeed warranted.

Many of the studies that were analyzed had conflicting results. It was noted that relatively few studies could be located at the middle-school level, and the most comprehensive and specific ones related to this issue appear to have been done at the college level.

When viewed in terms of the three established reading content strategy areas, it should be noted that the effect on achievement may naturally vary due to the type of strategy and/or activities used. In regard to the first category, that of provision for text selection, readability, individualization (multitext), and alternative activities, Wright (1980) and Farren (1982) concluded that lowered readability could actually lessen achievement rather than increase it. This might likely be due to the possiblity that content, relative to essential concept development, was edited out in addition to difficult vocabulary and sentence structure.

In dealing with a population of high school students failing English, math, and science the Landis, Jones, and Kennedy (1973) study noted an overall improvement in student performance in the

academic areas, due to the implementation of an altered study approach with different modalities. It should be noted that this was a highly modified content approach.

Relative to the second category of reading content strategies, that of preparing the student for reading and providing structure (e.g., preteaching vocabulary, establishing prior knowledge, structured overviews, advanced organizers), Graves and Clark (1981) investigated the effect of adjunct questions on high school achievement with low-level achievers. They compared the insertion of such questions into reading selections, the questions occurring at the end of the selection, and no questions at all, as different approaches. They found that the interspersed questions were the most effective for achievement, with the location of questions at the end still more beneficial than no questions at all.

Dea (1978) found significant results with the use and nonuse of vocabulary recognition materials for different words in eighth-grade history classes. Content achievement did increase.

Rosso (1980) studied the effects of organizational aids on concept acquisition and retention. Using tenth-grade social studies classes, he did not find significant results. He did, however, highly recommend further study into organizational aid.

Croyle (1980) looked at three types of expository organizers in relation to increased reading achievement and consequent content achievement. Each organizer outperformed the control

group which had none. In this study, the low-ability group seemed to benefit the most.

In studies related to the third category of reading content strategies, that of teaching activities that model reading and study behaviors and lead toward independence in these behaviors (e.g., previewing, vocabulary in context, levels of comprehension, categorizing and mapping, notetaking), there were conflicting results.

Colwell (1980) found beneficial results with direct functional study skill technique used relative to content area achievement. He concluded that multilevel texts were beneficial because of this. Tomlinson and Tomlinson (1975) developed a course that focused on methods and materials of an introductory course in biology and attempted to increase the students' skill foundations. They found that voluntary college science students did improve their reading skills, study skills, and overall achievement.

Glock and Millman (1962) investigated a study skills program for above-average students at the high school level to see if it facilitated improvement in terms of achievement. Their results did not support the effectiveness of the study skills program.

At the college level, Hawkins and Bartlett (1978) studied content area study skills and their relationship to grade-point averages but it was not at a significant level. Pauk (1965) investigated this same relationship by incorporating two

approaches, a study skills course, and a combination study skills course with a heavy reading development component, at the college level. Results indicated that both groups showed significant increases in academic achievement.

Belcher (1971) investigated whether increased reading efficiency would increase overall student grade-point averages. In his study, the differences were not significant.

Diem (1980) studied a staff development program in the teaching of reading in the content area for social studies teachers at the high school level. He found that through the utilization of this program, reading achievement did increase. It was assumed that content achievement would logically follow. In addition, Diem highly recommended further study in terms of methodological techniques in order to determine the most beneficial combinations.

Discussion and Conclusions

Direct empirical research and investigation regarding the relationship between the teaching of content area reading skills and general content area achievement has been extremely limited. The vast bulk of the research seems to have been based on the assumption that teaching content area reading skills is obviously and logically a valid approach to increasing reading achievement, and in turn, increasing subject area achievement. There seems to be a large underlying assumption that with the first you automatically get the second. Consequently, in the empirical

research in this area, the emphasis seems to be on general reading achievement as a results of the teaching of content area reading skills. This assumption has been challenged, at least on one occasion, by Russell (1974).

Even after a relatively exhaustive literary search, which included two on-line searches, document analysis of bibliographies and previous summaries of work, and hand searches through ERIC, RIE, and CIJE, it was surprising to note the limited number of direct empirical investigations in this area. Most of the studies deal with overall achievement in reading first (Croyle, 1980; Dea, 1978; Diem, 1980; Tomlinson & Tomlinson, 1975; Wright, 1980) prior to achievement in the content area. The assumption seems to be made that achievement will logically follow.

In addition, elements of a content area reading approach are investigated individually rather than collectively, in a unified program to assess for achievement (Belcher, 1971; Croyle, 1980; Dea, 1978; Graves & Clark, 1981; Rosso, 1980; Wright, 1980). In the studies where a collective approach is implemented, it is usually in the form of a study skills approach (Colwell, 1980; Glock & Millman, 1962; Hawkins & Bartlett, 1978; Pauk, 1965; Tomlinson & Tomlinson, 1975). Little, if any, study has been done specifically in the content area classroom. In most cases the students are treated by programs separate from the regular classroom with an attempt made to draw correlations to achievement in the content classroom (Belcher, 1971; Glock & Millman, 1962;

Hawkins & Bartlett, 1978; Pauk, 1965; Tomlinson & Tomlinson, 1975).

In addition, it was noted that in many of the studies the treatment often did not have the students as active participants. Methods were done to them, not with them (Croyle, 1980; Dea, 1978; Graves & Clark, 1981; Hawkins & Bartlett, 1978; Pauk, 1965; Rosso, 1980; Tomlinson & Tomlinson, 1975; Wright, 1980).

Few longitudinal studies have been done to determine long-term achievement gain, with only five of the reviewed studies assessed for more than 1 year (Diem, 1980; Glock & Millman, 1962; Landis, Jones, & Kennedy, 1973; Pauk, 1965; Tomlinson & Tomlinson, 1975). Many of the treatments were very short in duration, some only a few weeks (Colwell, 1980; Croyle, 1980; Dea, 1978; Graves & Clark, 1981; Pauk, 1965). This could definitely be a factor in the resulting outcome relative to achievement.

Basically, the overall conclusion was that the issue of teaching reading in the content areas and how it relates to content achievement is rarely faced directly, rather the issue is skirted by investigating related factors, or what are assumed to be related factors, such as reading achievement, increased grade-point averages, and increased test scores (Belcher, 1971; Dea, 1978; Hawkins & Bartlett, 1978; Rosso, 1980; Tomlinson & Tomlinson, 1975). It would seem that entire programs utilizing content area reading skill development need to be studied in terms of effect on overall content achievement as well as reading

achievement. The emphasis needs to be put on what goes on in the content area classroom in terms of teaching reading in the content area and the achievement results that either do or do not manifest themselves.

It is generally noted that in the related studies analyzed, the average and low-level achiever seemed to gain the most from the various treatment approaches (Colwell, 1980; Croyle, 1980; Glock & Millman, 1962; Graves & Clark, 1981; Landis, Jones, & Kennedy, 1973).

Finally, in many of the studies, more than one variable was approached in the research design and this made it difficult to ascertain the extent to which each was related to content area achievement (Dea, 1978; Diem, 1980; Glock & Millman, 1962; Hawkins & Bartlett, 1978; Landis, Jones, & Kennedy, 1973; Pauk, 1965; Tomlinson & Tomlinson, 1975). It may, indeed, first have to be determined what is the best indicator of achievement in the content area. Is it general reading achievement increases (Croyle, 1980; Dea, 1978; Diem, 1980; Pauk, 1965; Rosso, 1980; Tomlinson & Tomlinson, 1975; Wright, 1980)? Is it improved grade-point averages (Belcher, 1971; Glock & Millman, 1962; Hawkins & Bartlett, 1978; Landis, Jones, & Kennedy, 1973; Pauk, 1965; Tomlinson & Tomlinson, 1975)? Is it improved tests scores (Colwell, 1980; Croyle, 1980; Graves & Clark, 1981)? Investigators in these studies did not first empirically establish that such a relationship does indeed exist.

In conclusion, it should be noted that effects of content area reading efforts might include: (1) increased reading skills, but not conceptual achievement, (2) increased reading skill and conceptual achievement, (3) increased conceptual achievement but no increased reading achievement, and (4) no increase in either. The studies reviewed do not clearly discriminate among these possibilities.

Limitations of the Review

A few factors may have limited this review. In a few instances, abstracts rather than the original study had to be utilized because of inaccessibility to the original. In addition, the possibility exists that not all relative information and empirical evidence was located. The search through the literature might not have been exhaustive. This possibility is always present. Some materials simply could not be located, others were out of print, and some studies were inaccessible because they originated in foreign countries. It is suspected that some of these studies may have, perhaps, been highly relevant. Finally, it is possible that during the time period between the literary search and the actual composition of the research paper some new and relevant investigations may have occurred.

Implications for Further Research

Investigations that should be implemented in the area of teaching reading in the content area are numerous. First and foremost, it is highly obvious that more empirical and qualitative

research needs to be done to adequately determine whether or not the teaching of content area reading skills does, in fact, result in gained achievement in the content areas. Secondly, research needs to be done to determine which elements of the content area reading program are the most effective in promoting achievement in the content area.

Related to this, some initial research has been done regarding differences in the content areas. An article by Peters (1982) introduces a relatively new concept related to the study of teaching reading in the content areas. Peters develops a content processing model which is a different way to conceptualize content reading. He proposes that differences do exist within the cognate areas. He proposes a new model that he feels alleviates the weaknesses inherent in the present content area reading models. Peters recognizes the existence of differences in teaching strategies determined by the unique nature and structure of ideas and concepts in each of the content areas. It is very likely that only content specialists can provide this analysis--not reading specialists.

Implications for Further Use

The obvious implication for further use regarding the teaching of reading is the improvement of both reading skills in general and an increase in content area academic achievement. If it can be established empirically that content area reading skill development does both of these functions, then implementation into

school programs across the nation would indeed be warranted. The concept of developmental reading, from kindergarten through college level, would be a continuous process. In addition, if specific content area reading skills, or combination of skills, can be empirically grounded, then precise and highly successful reading in the content area programs can be implemented wherever feasible and appropriate. The approach is financially sound, and logical and appears not to be excessively difficult to initiate and organize.

In addition, if further research is done into the differences between methods for teaching reading in the varying content areas, a better understanding of the conceptualization methods in the content areas and the process of reading itself should be advanced.

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