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The Effect of Study Skills Training on the Academic Performance of Learning Disabled Students in Mainstream Classes

Kathleen M. Allen

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THE EFFECT OF STUDY SKILLS TRAINING ON THE ACADEMIC PERFORMANCE OF LEARNING DISABLED STUDENTS IN MAINSTREAM CLASSES

by

Kathleen M. Allen

A Project Report
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Specialist in Education
Department of Psychology

Western Michigan University
Kalamazoo, Michigan
June 1989

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I would also like to thank my husband, Martin, and sons, Vance and Joshua, for their encouragement, faith, and understanding during the time I was working on the project.

Kathleen M. Allen
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The effect of study skills training on the academic performance of learning-disabled students in mainstream classes

Allen, Kathleen Marie, Ed.S.

Western Michigan University, 1989
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CJSE-ZVPTER I

INTRODUCTION

Since Public Law 94-142 mandated that handicapped children receive an appropriate education in the least restrictive environment (Latham, 1987). The impact of legislation on the majority of learning disabled (LD) students that at least part of their school day is spent in a special education setting receiving instruction designed to improve upon classroom performance (Anderson-Inman, 1986). For special education services to be considered successful, academic and behavioral gains must transfer or generalize from special education settings to mainstream regular classrooms. Generalization has been defined by Stokes and Baer (1977) as "the occurrence of relevant behavior in different, non-training conditions (i.e., across subjects, settings, people, behaviors, and/or time) without the scheduling of the events in those conditions as had been scheduled in the training conditions" (p. 350).

Evidence indicates that expectations of naturally occurring generalization across settings are in error; it appears that transfer of training rarely occurs unless it has been purposefully programmed (Ellis, Lenz, & Sabornie, 1987; Horner, Sprague, & Wue, 1982; Rose, Lessen, & Gottleib, 1982; Stokes & Baer, 1977). Persistent generalization is one of the factors contributing to the Regular Education Initiative (REI), which advocates leaving
students with special needs in the regular classroom for the totality of their instruction (Hallahan, Kauffman, Lloyd, & McKinney, 1988). If the educational needs of these students could be met within a regular classroom setting, generalization issues would be irrelevant. However, many scholars have reservations concerning major issues involved in the REI and believe that "pull-out" arrangements will continue to be popular in educating special education students. If this is the case, efforts to promote generalization should continue focusing on unraveling variables that effect the process and identifying their respective impact on student performance (Anderson-Inman, 1987).

A variety of interventions and instructional methods have been used to promote generalization. One approach suggested by Deshler, Schumaker, Lenz, and Ellis (1984) for LD students is to use their existing academic skills in an optimal fashion so that content information can be acquired, then used in tasks where it is manipulated, stored, retrieved, and expressed. The intent of this approach is to teach students skills that will allow them not only to meet immediate requirements successfully, but also to generalize these skills to other situations over time (Alley & Deshler, 1979, p. 13). If students are taught strategies that can apply to a variety of tasks and settings, instruction is more efficient than if each skill is taught separately (Loper & Hallahan, 1982).

One strategy identified as necessary for success in school is that of study skills. These skills were defined by Devine (1987) as "those competencies associated with acquiring, recording,
organizing, synthesizing, remembering, and using information and ideas found in school" (p. 5). Although much has been written on the subject and study skill components can be found in a variety of textbooks, students typically do not receive systematic instruction on how to study in or out of class. Adams, Carnine, and Gersten (1982) concluded, after reviewing studies by Wertsch (1978) and Schallert and Kleiman (1979), that teachers often take the responsibility for what students know and do not know and arrange instructional and practice activities necessary for them to learn the information. However, teachers rarely teach students how to study. While some students may develop study skill strategies on their own, others may require organized, systematic, focused instruction to learn and improve upon these skills.

The effectiveness of study skill training has been shown on a variety of academic tasks. Learning disabled students have been able to improve skills in spelling memorization (Graham & Freeman, 1985) and retelling of expository material (Alexander, 1985) after study skill training. Strategy steps outlined by Deshler, Alley, Warner, & Schumaker (1981) have been used to improve performance on academic problems such as the monitoring of written errors, test-taking, and improving reading comprehension (Deshler et al., 1984). However, while task and situation specific skill improvement was demonstrated in these studies, the impact of study skill training on mainstream grades was not investigated.

Grades assigned to students' work are the most common form of academic evaluation. Every teacher is responsible for some system
of grading, but practices vary considerably on variables such as educational philosophy, grading purposes, factors evaluated, personal biases, and conformity to administrative policies which influence grade assignment. Different kinds of grading behavior exhibited by teachers may create dissimilar classroom environments, making the transition from the special education classroom to the regular classroom difficult and confusing for the mainstreamed student (Crowl & Berkowitz, 1985). Thus, grading differences across classroom settings could be a factor in generalization problems.

Mainstreaming has stimulated controversy regarding the reporting of grades for handicapped students in regular classrooms. Some educators believe that when a student’s handicap affects the ability to learn and perform in regular classes, mainstream teachers should use alternative means to measure learning (Carpenter, 1985; Kiraly & Bedell, 1984). Crowl and Berkowitz (1985) found that special educators were more likely to believe that different standards should be used in grading handicapped students than regular educators. They concluded that mainstreamed students may frequently be moving from an environment where teachers consciously take students’ uniqueness into account to an environment where teachers attend to individual differences among students to a far lesser extent. Regardless of mainstream teachers’ grading policies and practices, the reality is that students are dependent upon grades as a major indicator of progress. Grades earned by mainstreamed students are therefore an
important factor to consider when evaluating the effectiveness of academic interventions.

Another measure of academic behavior can be provided by students themselves through self-monitoring in the mainstream classroom. Self-monitoring can be used as a treatment procedure as well as a data collection method. Anderson-Inman (1986) advocated the use of self-monitoring checklists by students to promote the transfer of learning from the special education setting to the mainstream classroom. The rationale behind the use of checklists is to prompt students to use previously-learned skills and to encourage them to become more responsible learners. The checklists are easily implemented by students and require minimal investment of teacher time.

Research studies have examined the effect of self-monitoring alone and in combination with other interventions. Anderson-Inman, Paine, and Deutchman (1984), (cited in Anderson-Inman, 1986), found that few students transferred "neat-paper" skills learned by Direct Instruction in a special education classroom to papers written during other periods of the day until a self-monitoring checklist was implemented. After checklist implementation, the neatness of papers produced in regular education settings improved immediately and significantly. However, mixed results have been obtained when self-monitoring has been used as the only intervention. Rhode, Morgan, and Young (1983) found that the behavior of six "behaviorally handicapped" elementary school students improved after self-monitoring procedures were taught in the resource room and that the
improved behavior transferred to regular classrooms once self-monitoring procedures were extended into those settings. In a study by Broden, Hall, and Mitts (1971), self-monitoring slips were effective in increasing the study behavior of an eighth grade girl, and decreasing talk-outs made by an eighth grade boy. On the other hand, Santogrossi, O'Leary, Romanczyk, and Kaufman (1973) found that self-monitoring alone was ineffective in reducing the disruptive behavior of nine "emotionally disturbed" adolescent boys attending an after-school remedial reading class. Fizsen, Phillips, and Wolf (1972) found that self-monitoring had no consistent effect on the room-cleaning behavior of seven boys committed to a rehabilitation program. These studies indicate that self-monitoring alone can be an effective intervention under some circumstances and that self-monitoring can also be used to facilitate skill generalization.

Although some studies have demonstrated the ability of special education students to acquire and/or generalize task specific strategies, no studies have examined the impact of more general study skill training on grades earned in mainstream classes. In the present study, the effect of teaching three criterion-referenced study skills selected by mainstream teachers was evaluated. A self-monitoring checklist was used to promote generalization and record progress.
CHAPTER II

METHOD

Subjects

Three LD students attending a local junior high school were recommended for participation in the study by a special education teacher. All three students were participating in some classes in addition to special education classes.

Subject 1 was a fourteen-year-old seventh-grade student enrolled in three special education courses including Writing, Mathematics, and Skill Development. Her mainstream courses were Social Studies, Music, and Physical Education.

Subject 2 was a fifteen-year-old eighth-grade student enrolled in special education Reading, Expressive Writing, and Mathematics classes. His mainstream courses included Science, Economics, and Physical Education.

Subject 3 was a thirteen-year-old seventh-grade student enrolled in special education courses including Comprehension, Skill Development, and Mathematics. Her mainstream courses were Science, Economics, and Physical Education.

Setting

The primary method of teaching in all of the subject education courses, except Skill Development, was Direct Instruction.
This method involved teaching carefully sequenced essential skills to small groups of students using scripted formats (Carnine & Silbert, 1979). Oral and written student responses were frequently monitored to evaluate progress, diagnose errors, and plan correction procedures. The Skill Development class focused on group discussion, oral reading, and writing assignments. Based on academic and behavioral performance, students were awarded points each class period which earned incentives and translated into a letter grade.

Students were taken from a special education class to an adjacent unused classroom at the junior high school for study skill training. The trainer and subject sat beside each other at a rectangular table during all sessions.

Materials

The study skills survey used to determine which skills to teach is located in Appendix A. The study skills checklist that was used to self-monitor subject behavior in mainstream classes is in Appendix B.

Study skills were taught using A guidebook for teaching study skills and motivation by Bragstad and Stumpf (1987, pp. 29-61, 221-245). This book was chosen because it contains performance objectives and suggestions for assessing them, detailed learning experiences, and reproduction pages that can be duplicated for student use.

Subjects were required to maintain a study skill notebook while participating in the study. They were each given a plastic folder
Procedure

Experimental Design

A multiple baseline design across subjects was used. The order in which the three targeted study skills were taught to subjects was varied. Reversal and maintenance components were also incorporated into the design.

Dependent variables

Grades recorded by mainstream teachers and responses made by subjects on the self-monitoring study skills checklist served as dependent variables. Data generated by the study were used for research purposes only and were not shared with subjects, mainstream teachers, or special education teachers.

Performance was monitored for Subject 1 in Social Studies class and for Subjects 2 and 3 in Science class. Performance in the special education Mathematics class taken by all three subjects was also monitored to compare grading practices between mainstream and special education teachers. Grades recorded by teachers were converted into a percentage correct score on a daily basis. This score was assigned to one of 15 categories and plotted on a graph at the lowest percentage point of the category. All categories spanned four percentage points, except for the lowest category; this category included all grades below 45% correct.
Points were assigned to each response recorded on the self-monitoring checklist. In Part 1, "Yes" responses were scored as 1 point, while "No" or "N/A" responses were scored as 0 points. For Part 2, "All of the Time" responses were scored as 3 points, "Most of the Time" responses were scored as 2 points, "Sometimes" responses were scored as 1 point, and "None of the Time" responses were scored as 0 points. The scores were each converted to a weekly basis to the percent of points that could be awarded and were plotted on a number of points possible per week was 40 for Part 2.

**Independent variable**

Criterion-referenced study skill training was the independent variable. Study skill topics were determined by a survey completed by mainstream teachers. The Science teacher for Subject 3 was not surveyed because his students were not selected for participation in the study. The Science teacher for Subject 1 and the Science teacher for Subject 2 selected as the study skills to teach. They are covered in Bragst and Stumpf's (1987) book, materials described in these chapters were used.
training sessions except for program modifications described in Appendix C.

The goal of training was for all subjects to meet 100% of the criterion described in Appendix D. If a student was unable to meet the criterion of an assignment during the session in which it was given, he was given the opportunity to complete the requirement in subsequent training sessions. A minimum competency level was not specified prior to training. It was decided that if subjects were unable to meet 100% of the criterion, a percentage complete score would be calculated to report the level of study skill training mastery.

Instruction

The subjects were told that their special education teacher wanted them to participate in half-hour study skill training sessions to help with their work in mainstream classes. They were shown the self-monitoring checklist and were told that they must fill it out at the end of each day in their mainstream classroom, have the teacher initial it, and return it to the special education classroom.

Prior to using the checklist, the items and methods of filling them out were discussed with each subject. They practiced filling out the checklist in the special education classroom for three days before the checklists were used in the mainstream classroom. Mainstream teachers were also instructed on how to fill out the checklists. Questions about the checklist completion procedures were
answered, and the necessity of responding to all categories was emphasized. Feedback was not given regarding the accuracy of student or teacher responses.

No incentives were given by the trainer to subjects for participating in the study. However, the special education teacher gave each subject the maximum number of points possible for the portion of the class period spent with the trainer. In addition, the special education teacher did not require the subjects to make up work missed while participating in the sessions.

Pretreatment

Percentage correct grades in mainstream classes were calculated beginning on the first day of the fourth and final quarter of the school year.

Baseline 1

Subjects 1 and 2 began filling out daily checklists in mainstream classes on the sixth school day of the quarter. Subject 3 replaced another student who dropped out of the study. She began filling out checklists on the 16th day of the quarter.

Study Skill Training

Subject 1 participated in half-hour daily study skill training sessions from the 15th through the 29th school day of the quarter. She initially received instruction in Concentration, followed by Time Management and Recall.
Subject 2 received study skill training from the 20th day through the 34th day of the quarter. The order of his skill training was Time Management, Recall, and Concentration.

Subject 3 participated in study skill training sessions from the 25th through the 38th day of the quarter. The order of her training was Recall, Time Management, and Concentration.

Each subject continued to fill out self-monitoring checklists daily in mainstream classes during training.

Baseline 2

Subject 1 filled out self-monitoring checklists until the 38th day of the quarter. Subjects 2 and 3 filled out checklists until the 44th day of the quarter.

Maintenance

Percentage correct grades in mainstream classes were calculated until the 52nd, or last, day of the quarter.

Agreement

Daily ratings by students and teachers were made on the same self-monitoring checklist form. Ratings were therefore not independent. However, an agreement formula was used to determine how well ratings between subjects and mainstream teachers corresponded. The following formula was used on the first four items in Part 1 and all items in Part 2.
Agreement = \frac{A}{A + D} \times 100

Where \( A \) = agreement between subject and teacher on the checklist item rating.

\( D \) = disagreement between subject and teacher on the checklist item rating.
CHAPTER III

RESULTS

All subjects met 100% of the study skill criteria in 12 half-hour sessions. Subject 1 turned in 75% of the self-monitoring checklists given to her, all initialed by her Social Studies teacher. She had an 89% turn-in rate prior to the last week of Baseline 2 when she refused to continue self-monitoring. Subject 2 turned in 94% of his checklists; 85% were initialed by his Science teacher. Subject 3 turned in 100% of her checklists with 96% initialed by her Science teacher. Rating agreement on the checklist was 93% for Subject 1 and 100% for Subjects 2 and 3.

Figure 1 presents percentage correct grades recorded by the subjects' mainstream teachers. Grades for all subjects were variable throughout the quarter, with no observable changes in academic performance related to experimental conditions. During some experimental phases there were not enough data points to evaluate student performance. Subject 1 had only one data point in the pretreatment phase and no data points in maintenance. Her Social Studies teacher recorded no grades after the 38th day of the quarter although the quarter continued through the 52nd day. During the time Subject 2 was participating in study skills training sessions his Science teacher recorded only one grade while 15 grades were recorded during the first 19 days of the quarter, only 6 grades were recorded in the remaining 32 day period.
Figure 1. Percentage Correct
Subject 3 were recorded more consistently. The longest time period between data points was 6 school days. However, only one data point was recorded in Baseline 2.

Grades recorded by the special education Mathematics teacher during the fourth quarter are shown in Figure 2. As with mainstream class grades, no changes in performance were associated with experimental conditions. Comparison of grades recorded in Figures 1 and 2 indicates that the special education teacher assigned higher, more frequent, and less variable grades than did mainstream teachers. The special education teacher recorded grades daily and assigned 100% correct grades to each subject more than half the time.

Data in Figure 3 show the percentage of possible points awarded weekly by subjects on the self-monitoring checklist. While a few individual trends were observed, there were no consistent response changes across subjects in any experimental phase.

Responses made by Subject 1 on Part 1 of the checklist ranged from 34% to 95% of the total possible points that could be awarded. A decreasing trend in the data was observed from Baseline 1 through Baseline 2. On Part 2 of the checklist, responses for Subject 1 ranged from 46% to 67%. She rated herself highest in Baseline 2.

On Part 1 Subject 2 awarded himself between 35% and 60% of the total possible points. He awarded himself a higher percentage of possible points on Part 2 of the checklist with responses ranging from 84% to 100%.

The percentage of possible points awarded by Subject 3 on Part 1 ranged from 34% to 63%. The trend in responding increased from
Figure 2. Percentage Correct Grades Recorded by Special Education Teacher.
Figure 3. Responses Recorded Weekly by Subjects on the Self-Monitoring Checklist. The percentage of "Yes" responses recorded in Part 1 and the percentage of points assigned to categories recorded in Part 2 are shown.
Baseline 1 through training, then decreased in Baseline 2. Because there is only one data point in Baseline 2, the strength of the trend cannot be determined. On Part 2 Subject 3 awarded herself between 75% and 100% of the total possible points. Four data points were 100% with two lower scores awarded during the training phase.
CHAPTER IV

DISCUSSION

Although all subjects met 100% of the study skill training criteria and consistently turned in self-monitoring checklists, grades recorded by mainstream teachers did not improve. The most plausible explanations for this outcome are that the general study skills learned were not sufficient to affect performances, the subjects did not apply skills training setting, or grading procedures preclude skill improvement.

Each subject participated in six hours of training, covering three study skill topic areas. Although the acquired study skills may have been applied in mainstream classrooms, they may not have been powerful enough to have an impact on grades. Allowing more time to study skill training and expanding the topic areas covered may lead to more significant results. Individualizing content to incorporate student needs and mainstream classroom expectations may also be important in maximizing training outcomes. Thorpe, Chiang, and Darch (1981) contend that special education personnel should routinely visit mainstream classrooms and communicate with regular education teachers to learn about expectations in those settings. This information would help trainers to select examples that students could practice how to perform skills across t.
natural stimulus and response variations to encounter in other settings (cf. Horner, Sprague).

While the subjects demonstrated study skill training sessions, they may not have applied settings. The self-monitoring checklist design skill use in mainstream classrooms had no effect performance alone or in combination with study skill subjects demonstrated that they would self-monitor incentives by regularly turning in study skill.

Interobserver reliability was high between all mainstream teachers, indicating that teachers subject evaluation of behavior or they initial without considering the validity of the ratings.

Data generated by the checklist showed that rated themselves higher on items in Part 2 than in experimental conditions. Part 1 scores were low subjects awarded themselves few points on the last describe study skill applications beyond that. Subject 1 also awarded herself few points on the formation suggests that failure to apply study have prevented the subjects from improving performance.

Another explanation for the lack of treatment grades may have been subjectively determined so improvement was not reflected in academic performance of the last quarter of the school year teachers.
preconceived attitudes regarding the academic ability of students and graded them accordingly. Mainstream teachers may also believe that special education students are not capable of earning high grades in their classrooms. Carpenter (1985) reported that one regular education teacher stated that handicapped pupils could earn no better than a C in that particular classroom. When pressed for a reason, the teacher replied that the students are handicapped, and therefore could do no better.

Differences in grading practices between special education and mainstream classes may interfere with skill generalization. The subjects' special education teacher assigned points to each student on a daily basis which translated into a letter grade at the end of the week and provided a basis for incentives. Classroom behavior and performance on academic tasks were equally considered and evaluated according to posted rules and criteria. Mainstream teachers graded more sporadically and assigned different weights to assignments. Behavior was not a factor in grading individual assignments, but was considered when calculating grades at the end of the quarter. These differences in grading practices between special education and mainstream teachers resulted in variable performance and inconsistent feedback for students. Of particular concern is the infrequent grading by mainstream teachers; evaluation should be a continuous and integral part of the instructional process (Shapiro, Lukasevich, & Shapiro, 1986). If reinforcement in the form of student achievement fails to occur or is delayed substantially, the tendency is to give up altogether (Sulzer-Azaroff & Mayer, 1986).
This logic implies that subjects may have applied study skill strategies initially, but reverted to previous study habits when use of the new skills was not rewarded.

Results of this study are consistent with evidence that student performance in the special education classroom often fails to generalize to other settings. A recent survey by Bursuck and Epstein (1987) concluded that despite a continuing need for studies dealing with generalization in regard to LD students, such research is apparently not being conducted. One reason they gave for lack of research in this area is the fact that given LD students' generalization problems, studies are more likely to lead to insignificant findings and are consequently less likely to be published. While a variety of approaches have been suggested to promote generalization, there is no formula that has proven successful across subjects, content areas, or settings. Even when generalization is carefully programmed, the transfer of skills across settings cannot be guaranteed.

This study touched upon several variables that may have an impact on generalization across settings for mainstreamed LD students. Study skill training and instructional methods deserve further scrutiny as a method of helping students to become more independent learners. Methods to insure application of study skills at school and at home should also be investigated. The effect of different grading practices across settings should be examined for both its effect on generalization and its validity for measuring mainstreamed student progress. The utility of student self-monitoring procedures
to promote consistent academic performance across settings should also be investigated further. Evidence indicates that mainstreaming will continue to be the method most school systems use to provide the least restrictive environment to LD students. Consequently, the issue of setting generalization will continue to be important.
Appendix A

Study Skills Survey
The following topics have been identified as the most beneficial in helping Special Education students succeed in mainstream classes.

Please choose the topics you feel would be most beneficial in your classroom.

1. Concentration
   Teaching students how to improve concentration.

2. Time Management
   Assisting students in evaluating their time in an organized manner.

3. Remembering
   Increasing student awareness of their ability to remember, teaching memory techniques.

4. Technical Vocabulary
   Teaching students effective use of technical vocabulary.

5. SQ3R (Survey, Question, Read, Recite, Review)
   Evaluating students' current knowledge and teaching SQ3R.

6. Note-taking
   Discussing the importance of effective note-taking and teaching students to take notes proficiently.

7. Outlining
   Teaching outlining technique and remembering a passageway.

8. Dictionary Usage
   Teaching students how to use a dictionary tool in order to look up words easily.

9. Text Look-back Strategy
   Training students to return to a text in order to retrieve specific information.

10. Other (Please describe)
Appendix B

Study Skills Checklist
## STUDY SKILLS CHECKLIST

### Part 1

<table>
<thead>
<tr>
<th>Did you:</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sit in your seat before the bell rang?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have all materials necessary for class?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turn in homework due today?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Write down the assignment?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Follow a study schedule for the past 24 hours?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Study material for this class in the past 24 hours?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Review material for this class in the past 24 hours?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Use special memory systems (mnemonics) to learn information for this class in the past 24 hours?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Part 2

<table>
<thead>
<tr>
<th>Did you:</th>
<th>All of the time</th>
<th>Most of the time</th>
<th>Sometimes</th>
<th>Hardly ever</th>
<th>None of the time</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listen carefully to the teacher?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow directions the first time?</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Get started on tasks immediately?</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Stay on-task?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ignore persons or things competing for your attention?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ask questions if you did not understand something?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TEACHER COMMENTS:

*Student self-report items.*

Teacher initials
Appendix C

Study Skill Training: Program Modifications
STUDY SKILL TRAINING

PROGRAM MODIFICATIONS

I. Concentration: Learning to Focus

A. Activity 6 on p. 33, preparing a concentration guideline, was eliminated.

II. Time Management: Overcoming Procrastination

A. Activity 2 for Topic 1 on p. 39, discussion of time problems by guest speakers, was eliminated.

B. Activity 2 on p. 41, ABCing activities, was done for 1 week instead of 3 weeks.

III. Remembering: Storing and Retrieving

A. Activity 3 on p. 48, skimming study skills books, was eliminated.

B. Activity 4 on p. 48, pooling study skill methods, was eliminated.

C. The following questions and chapter headings were used for activity 8, sorting, on p. 52.

1. Subject 1

   a. The Cold and the Warm Regions

      1) What are the main climates of Northern America?

      2) Which climates do the United States and Canada share?

   b. The People of the United States and Canada

      1) From what parts of the world did the people of the United States and Canada come?

      2) Where in the United States and Canada do the people live?

   c. Two Democratic Governments

      1) In what ways are the governments of Canada and the United States similar?
2) What is the system of government in Canada?

**d. Farmlands of the United States**

1) Where are the four main farming regions in the United States?

2) What important changes have taken place in American farming?

**e. Trade, at Home and Abroad**

1) Why do people carry on trade within a country?

2) Why do the United States and Canada trade with the rest of the world?

2. Subject 2

**a. Work and Energy**

1) How is work calculated?

2) Why does a bulldozer use more energy than a garden tractor when work is done?

**b. Engines**

1) How does a gasoline engine operate?

2) What are the differences between a diesel engine and a gasoline engine?

**c. Levers**

1) Name the two arms in a lever.

2) What are the three classes of levers?

**d. Efficiency**

1) How is the efficiency of a machine calculated?

2) Define efficiency.

**e. Speed**

1) What term refers to how fast an object is moving?

2) How is average speed calculated?
Subject 3

a. Food and Health
   1) Define the terms
   2) How can you have

b. Minerals
   1) In what form are minerals in the body?
   2) Can minerals be

c. Fats and Oils
   1) What elements are in oils?
   2) What is the function

d. Food Additives and F
   1) Why are preservatives
   2) What information is food label?

e. Vitamins
   1) What is the best you need?
   2) What is vitamin D?

D. Activity 9 on p. 52, category:
E. Activity 4 on p. 53, lecture:
F. Activity 7 on p. 58, mnemonic:
G. Activity 8 on p. 59, mnemonic:
Appendix D

Study Skill Training: Program Material Criteria
STUDY SKILL TRAINING

PROGRAM MATERIAL CRITERIA

I. Concentration: Learning to Focus

A. Complete 30-item questionnaire, "How Well do I Concentrate?", Reproduction Pg. 9.

B. Write paragraph - What currently interferes with studying? What changes can be helpful? (At least 4 items must be included for each question)

C. Complete open-ended questionnaire - What is concentration? (provide definition) What contributes to concentration? (list at least 4 items) What interferes with concentration? (list at least 4 items)

D. Make a chart. List at least 4 items under the following headings: Obstacles to Concentration, Solutions.

E. Survey at least two teachers. Record at least 5 responses to each of the following questions: What contributes to concentration? What detracts from concentration?

II. Time Management: Overcoming Procrastination

A. Before and after training, complete 17 item questionnaire, "How Do You Organize Your Time?", Reproduction Pg. 14.

B. After reading Reproduction Pg. 11, "Why Bother With A Time Schedule?", make a list of at least 5 changes that may occur in their lives as a result of experimenting with the use of time.

C. Fill out Reproduction Pg. 12, "Coping With Stress - Scheduling", accounting for all time for a week.

D. Answer all questions on Reproduction Pg. 13, "Where has the Week Gone?"

E. Fill out the following chart for the week listing all homework assignments.

<table>
<thead>
<tr>
<th>Date</th>
<th>Assignment</th>
<th>Planned Time for Study</th>
</tr>
</thead>
</table>

F. Fill out the "To Do List" on Reproduction Pg. 15, including at least one item for each category.

III. Remembering: Storing and Retrieving

A. Draw three columns on a piece of paper, and write answers to the following:
1. In column 1 list five things from both in school and outside school that are easy for you to remember.

2. In column 2 list 5 things from both in school and outside school that are difficult for you to remember.

3. In column three compare the two lists. Write at least three reasons for the differences between these two lists.

B. Before and after training, fill out Reproduction Pg. 17, "A Memory Habits Checklist" (14 items)

C. List at least 4 categories to group objects described in activity number 4, page 50.

D. With 70% accuracy, sort 10 questions derived from lessons previously assigned in the mainstream class textbook into columns according to the major heading that contains the answer.

E. Write down at least 3 mnemonic devices that aid in recapturing basic information.

F. Write down a list of numbers from 1 to 10 with corresponding rhyming words listed on p. 58, no. 6, from memory.

G. List at least 5 suggestions to improve memory.
Appendix E

Human Subjects Institutional Review Board Approval Letter
TO: Kathleen Allen
FROM: Ellen Page-Robin, Chair
RE: Research Protocol
DATE: April 13, 1988

This letter will serve as confirmation that your research protocol, "The effect of study skills training on the academic performance of learning disabled students in mainstream classes" has been approved as exempt by the HSIRB.

If you have any further questions, please contact me at 387-2647.
BIBLIOGRAPHY


Horner, R. H., Sprague, J., & Wilcox, B. General case programming for community activities. In B. Wilcox & G. Bellamn (Eds.), Design of high school programs for severely handicapped students (pp. 61-98). Baltimore, MD: Paul H. Brookes.


