THESIS

This is to certify that the

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"An Experiment to Develop Desirable Study Habits"

presented by

Percy Ray Douglas

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R. P. Gibson

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AN EXPERIMENT TO DEVELOP DESIRABLE STUDY HABITS

by

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

THE PROBLEM

One of the major problems in helping pupils of the elementary schools adjust to the high school program is to have them develop proper study habits. In the elementary school, pupils are required to do so little unsupervised home work, and so little abstract reading, from which they must make notes for themselves, that they are at a loss as to how to attack such problems. Then again, they have been accustomed to being, more or less, made to apply themselves. When pupils in the elementary school fall behind in their work, the teacher sees to it that they catch up. In the secondary school, the pupil is much more dependent upon himself to keep up in the work as it is presented. Two problems evolve: one of getting the pupil to do a sufficient amount of home preparation and review, the other of having him do this preparation and review in what is considered the most efficient manner. It was the purpose of this study to:

(1) develop a method of promoting good study habits amongst grade nine students

(2) to test the efficiency of this method

(3) to prove that good study habits result in better

academic achievement.

To carry out the above study, it was necessary to devise a good measuring instrument. Why and how this was done is explained later, but this did become a subsidiary aim.

The need for this study. There is no question in the mind of any high school teacher that there is a need to develop good study habits. The majority of parents will also attest to this need. Students are continually seeking availing sources to find the most efficient study habits. If we accept the requisites for success in high school as requiring: learning ability (as measured by the so-called "intelligence tests", an adequate preparation for high school work, good health, wholesome home conditions, a desire to learn, and good study habits; then we see much need for developing good study habits. Students who rank in the top quartile of a distribution of learning ability scores, whose health and home conditions are good, and who want school success, are failing. Some of these same students are dropping out of school as soon as their age permits, because of unsatisfactory school progress. Many others, capable of high scholastic standing are achieving only mediocre grades in their subjects. Students with brilliant elementary school careers are not so continuing in their secondary school careers. Teachers

and parents are much concerned over the situation. The students are concerned with the results. It was the purpose of this study to see if the causes of the above conditions were poor study habits and to see if good study habits were developed would better academic achievement result.

Limitations. Much investigation into this matter has been done on the college level, some of which will be mentioned in the next chapter. Wrenn has perhaps done more on this level than most investigators.[1] Wrenn found that the average college aptitude score of 129 disqualified college students was only one point below the average score for the student body as a whole.[2] Wrenn came to the conclusion that study habits must be a determining factor. Humber demonstrated certain significant differences in study habits between high scholarship and low scholarship students.[3] The same study suggested differences in the study habits of men and women.

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1 C. Gilbert Wrenn, Practical Study Aids (Stanford University Press, Stanford University, California, 1933)

2 C. Gilbert Wrenn, Scholarship and Habits of Work (Proceedings of the Eighth Annual Convention of the Pacific Coast Association of the Collegiate Registrars 1933) pp 26-9

3 Wilber J. Humber, "An Analysis of the Differences in Certain Study Habits between Scholastically Successful and Unsuccessful Science, Literature and Arts Freshmen in the Year 1938-39 at the University of Minnesota" (unpublished Master's thesis, The University of Minnesota, Minneapolis, 1940)

The problem as it pertains to college students, however, is quite distinct from the problem as it applies to secondary school students, particularly those in grade nine. As already mentioned, the students entering secondary schools have developed very few study habits as they have not had much occasion to study in the real sense of the term. Almost all work they have done has been under supervision and planned for them. They have been made to do it. The only unsupervised work is an occasional list of words for spelling or a few problems in mechanical arithmetic. At the college level, the students will have acquired study habits, but these study habits may not be as wise, as economical of time or energy, or as effective, as they might be. The outlook of the pupil entering a secondary school is also so different from that of the college student. The former feels himself in no immediate need of preparing for economic independence. His incentives for doing wise amounts of home preparation are mostly to please his parents, and maintain his own self-esteem. He sees little connection between obtaining a high mark in Latin Authors and obtaining more satisfaction in his later years. He is just entering upon the social whirl of the teen-ager with its many ramifications, but he has not well-defined interests, either in individuals or in the many social pursuits that are offered to him. So we are faced with a

different situation when trying to develop good study habits in first-year secondary school students.

Purpose of the study. Much has been done, and is being done, to develop good study habits in secondary school students, but the work seems to lack statistical evidence of its success. These attempts, moreover, do not seem too thorough but are rather more of a suggestive nature. The common practice is to present to the student, in some form or another, a set of rules, which it is hoped that the student will adopt as his own, and that in so doing, his school work will be improved. The next chapter of this study will mention several of these attempts.

This investigation attempted to discover a more thorough method of developing desirable study habits on the part of students entering secondary schools and also attempted to prove that the method adopted, did accomplish this aim.

There were several subsidiary aims that should be mentioned. It was felt that all interested parties; the student, the teacher, the counselor, and the parent, should be made aware of the study habits that needed developing. A follow-up was felt to be necessary to see whether these study habits were being acquired by the method used. Each student should be compared, in regard to study habits with other students of his group. It was hoped that this

investigation might also accomplish these subsidiary aims.

Procedure. In preparing for this study, a brief review was made of what has been recently done along similar lines by other investigators. This is summarized in Chapter Two. The method by which the problem was attacked is given in detail in Chapter Three. Chapter Four is a report of the findings of the investigation. The last chapter, Chapter Five, presents a summary of the findings and suggests further investigation that might be done along this line.

Setting. The Toronto school system, as it existed at the time of this study, demanded the acquisition of efficient study methods. Very few secondary school students had assigned study periods. In all grades, the normal load was nine to twelve subjects. Most of the teachers complained of the lengthy curriculum they had to cover. This meant that each of the nine or more teachers put considerable emphasis on school work to be done out of school time. In several studies made, it was found that few students in the lower grades were able to successfully keep up in their school work without doing one to two hours home work on most school days, and in the upper grades two to three hours homework.

Summary. This study was made to develop a method of promoting good study habits amongst grade nine students

in the Toronto school system in which good study habits are most essential for success.

CHAPTER II

REVIEW OF THE LITERATURE

Previous investigations. Volumes have been written on the subject of "How to Improve Study Habits". Many investigations have been made to discover what study habits do improve scholastic achievement. Practically all of these investigations, however, have been on the college level. Even tests and test procedures, designed for high school students, have been standardized or developed with college groups. There seems little but theory involved in what has been done on the subject of study habits of high school students. Investigations that have been carried out were seldom able to hold constant other factors affecting scholastic achievement, such as age, intelligence, previous academic experience, health and home situation.

Space does not permit of more than just mentioning some of the earlier investigations that pioneered the movement. Strang contributed some suggestions on how to study in her attempt to provide better all-round development of students while they were at school.[1] Weinland was one of

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[1] Ruth Strang, Personal Development and Guidance in College and Secondary School (Harper and Brothers, New York, 1934)

the first to make a study of how students at college actually did study.[1] Deich and Jones examined the study habits of those students scholastically successful at college.[2] Ross and Klise,[3] Pressey[4] and Chiang[5] also carried out similar investigations. The results of these studies are available to us, and have been used in subsequent studies that will be mentioned later. It still remains to apply and substantiate their findings with secondary school students.

Williamson found that students at the University of Minnesota, who had superior ability, tended to study fewer hours, and found that an increase in the amount of study-

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1 James D. Weinland, "How Successful College Students Study", Journal of Educational Psychology, XXI (October, 1930), pp 521-6

2 Charles Deich and Elmer E. Jones, A Study of Distinguished High School Pupils in Iowa, (Department of the Interior, Bureau of Education, Bulletin #46, Washington; Government Printing Office)

3 Clay C. Ross and Nira M. Klise, "Study Methods of College Students in Relation to Intelligence and Achievement", Education Administration and Supervision XIII November 1927, p 148

4 S. L. Pressey et al, Adventures in University Teaching (Public School Publishing Co., Bloomington, Illinois, 1927) p 148

5 Tsai-Hwa Chiang, Relation of Reading and Study Habits of College Students to Certain Mental and Educational Achievements, (unpublished PhD Thesis, University of Michigan Library, 1936) p 222

ing resulted in a decrease in scholastic achievement.[1] This again was on the college level and the investigation was carried on the week before examinations when, if at any time, students would be studying to the limit of their ability. However, other studies have found the same thing to be true and recommended, not more studying time but more efficient methods of studying.

Many tests, such as the Kimber Study Skill Test, have been developed. The best known, and most widely used seems to be Wrenn's, "Study-Habits Inventory". Humber has further investigated this instrument, and as a result the test has been revised since its first inception. Although advocated for use in high schools, this test was standardized and developed on a college level, where, as previously pointed out, the conditions greatly vary from those pertaining in high schools. Some of the statements do not apply to the life of most high school students, e.g. "I am conscious that I have been out of school too long or took basic subjects too long ago", "I have to study where I can smoke". Since the scoring of the test is based on responses by college students, it should not be taken for granted that this scoring applies to high school stu-

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1 Humber, op. cit.

dents. The aim in high school is to establish good study habits, for whether the student is high in scholastic ability or low, the acquisition of good study habits will definitely be an asset. (This was shown in this investigation). With Wrenn's Test, more emphasis is put on some study habits, whereas it is the aim in high school to develop all desirable study habits that may assist the student. Therefore, it doesn't much matter to the student whether it is slightly better to avoid "waiting for the mood" before starting to study, than it is to avoid "distributing time unwisely". He should neither distribute his time unwisely nor wait for the mood. All the student needs to know are the study habits that should be developed. He should then be helped to develop all of these study habits. When a complicated weighted scoring system is used, as in Wrenn's Test, the student's attention is apt to become focussed on the system of scoring, when it should be focussed on the study habits. Since this instrument seems to be the most widely used, it was used in conjunction with this investigation for comparison purposes.

Motivation plays an important part in studying effectiveness. Eckert made a study, in which she found that superior students had overcome greater difficulties, in order to obtain a college education, than had inferior

students.[1] The necessity of having to overcome these greater difficulties motivated them to surpass the achievements of their less handicapped companions. Fay found at De Pauw that students who received an "A" grading at the end of the first month of school achieved much more than others.[2] Initial success motivated towards continued success. A study at the Buffalo Collegiate Centre found that students who were warned in an interview that they were liable to potential failure, had fewer failures in the end than those who were not warned. The interview had apparently motivated them towards greater effort with resulting greater success.[3]

Canadian studies. Several studies have recently been made in Canada. Professor E. L. Daniher found that school achievement depended upon native intelligence, diligence and attitude.[4] The latter two qualifications included the amount of time given to the task and the

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1 R. C. Eckert, Who is the Superior Student? (University of Buffalo Studies, number 32) pp 767-71

2 P. J. Fay, "The Effects of Knowledge of Grades on Subsequent Achievement of College Students", Psychological Bulletin 1933, number 30, p 710

3 Clay C. Ross and Nira M. Klise, "Study Methods of College Students in Relation to Intelligence and Achievement", Education Administration and Supervision XIII, 1927

4 E. L. Daniher, "Teaching How to Study", The School Magazine, October 1942, pp 99-101

effectiveness of the method of attack. His conslusions were that it is becoming increasingly important that the student's efforts be as wise, as economical and as effective as possible. To this end Daniher tried dramatizing correct study habits while students watched. He showed how "working under pressure" brought more accurate results in mathematical operations than "going slow and getting it correct". He similarly demonstrated how much more efficient it is to memorize as a whole than in parts. One statement of Daniher's applies to this study.

> A considerable body of rules and suggestions may be built up, but much of it is without scientific proof as to its validity. Let us not forget that, long before Minot and Murphy proved scientifically the value of liver extract for anaemia, our mothers and grandmothers knew that 'liver was good for the blood'. A similar history is behind most medicines.

Daniher goes on to apply the same principle to study habits.

Trueman of Mount Allison University found that the explanations given by most students as to why they did not study, was that they were not interested in the subject, that they did not understand it, or that they did not see what good it would ever do them.[1] In his own studies in Teachers' Colleges in Fredericton, Columbia University, University of Heidelberg and the University

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1 George J. Trueman, "How To Study", The School Magazine, October 1942, pp 91-8

of Berlin, Trueman found that though effort is usually necessary, unless interest is aroused, study will be formal lifeless and unproductive. Quoting from Dr. Trueman:

> It is my experience that the student who is anxious enough about his work to feel real concern at the thought of failure, and who has a wholesome fear of disappointing his parents and friends, is more likely to do well . . . There is a high correlation between high school and university marks . . . care ful study leads to the conclusion that much better work could be done by unsuccessful students, if they were taken in hand early and led to adapt better study methods.

Most current attempts to improve or develop study habits consist of presenting the student with printed rules, in the apparent hope that he will, "read, study and inwardly digest them".

Dr. Karl S. Bernhardt, professor of psychology at the University of Toronto, developed a very synopsized set of principles. There are three:

(i) Plan your work and budget your time. Determine what you are going to study and lose no time in getting at it.

(ii) Have a place for study and study only. When not working leave your study place so that your work and your work only is associated with your study place.

(iii) Know what you want to learn and make a determined effort to learn it. Think of what you read, and challenge the facts given. Learn to read rapidly. Organize your knowledge in clear, definite and concrete terms. Frequently test yourself.

Attempts to develop study habits. Kornhauser is one of the leaders in the type of work where a student is presented with printed rules.[1] His book "How to Study", has perhaps wider circulation than most of its kind. It presents the student with series of rules on such topics as, "Development of Effective Methods in Reading", "Aids in Memorizing", etc. To the student anxious to improve his study methods and willing to put these rules into practice, much can be gained. Both of these conditions are necessary, though.

Another excellent little booklet, along the same lines as that of Kornhauser's book, is "Learning How to Study" by Marshall.[1a] This booklet also gives a series of rules, but does so in a way that appeals more to the high school student. The book is entertainingly illustrated, ridicules poor study habits in an acceptable way, and is written in the language that holds the attention of high school students. Throughout the book, and at the end, are methods by which the student can put into practice the rules suggested. Check lists are provided to see that the student does put these rules into practice. It is one of the best books of its kind, and when used as

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1 Arthur W. Kornhauser, How to Study, University of Chicago Press, Chicago 1946

1a M. V. Marshall, Learning How to Study, Department of Education, Acadia University, Nova Scotia, 1945

suggested by the author, does produce good results.

Mention has been made of Wrenn's "Study Habits Inventory". Although this is not a Canadian publication, it seems fitting to mention here that in conjunction with this inventory, Wrenn has published several pamphlets such as "Studying Effectively", "Study Hints for High School Students", which follow up the test and point out to the students, how they can develop the study habits they need. Wrenn's book, "Studying Effectively", includes the test at the beginning of the book and at the end, so that the student may test himself after attempting to improve his study habits.

Many, many such aids could be mentioned but little value would be added to this paper. It is, however, from a perusal of all this literature, all these tests, all these books and booklets that this investigation has been developed. As was said by Daniher, many of the suggested study habits have never been proved scientifically. In developing this investigation, the experience of all these other investigators was accepted and an attempt was made to carry out a program that would develop effective study habits as suggested by their investigations, but prove scientifically that they were effective.

Summary. From the brief perusal of the literature in this field, it is seen that much thought has been given

to study habits, but that the problem of having students develop good study habits has not been given adequate attention. The next chapter explains an attempt made to do this.

CHAPTER III

THE METHODOLOGY OF THE INVESTIGATION

Introduction. As has previously been mentioned, former investigations seem to fall into two groups. One group has compared the study habits of successful and unsuccessful students and concluded that the study habits possessed by the former and not the latter must have made the difference. In all of these investigations, it has been impossible to control all of the other influencing factors. The other group has developed rules for study and presented them in various ways, but has not carried on any investigation to see if the rules were effective. This investigation overlapped the work of both these groups, and attempted to do what they had failed to do.

Developing a test. After studying the many investigations of the second group, mentioned above, a list of study habits was compiled that the majority of these investigators seemed to consider important. These were first arranged in the form of a test and after preliminary presentation to students, a weighted scoring key was established. The test and the weighted scoring is given in Appendix A. As this instrument did not adequately serve the purpose, time and space will not be taken to explain how the weighted scoring was established. The

lack of correlation between high scores on this instrument and scholastic success, and the fact that little connected follow-up was provided, led to a revision. The revised form is presented in Appendix B. This revision had two aims: to simplify the scoring and to include items that seemed of greater importance than some already used. In addition to these two aims, it was hoped to overcome the deficiencies of the first instrument. These deficiencies were: ambiguity in meaning of some of the items, too many items, more than one point covered by some items and too long an explanation for some items. Again this revision was not satisfactory, as it did not fully accomplish the two aims above, so no attempt will be made to explain the developmental procedure used with it, or the method by which a scoring device was developed, The third revision, which is presented in Appendix C, was the form used for this investigation.

This third revision also had two aims: to provide a simple scoring system, and to provide a simple follow-up procedure of developing good study habits. As the aim was not to show the student which study habits were more important, but simply what study habits he needed to develop, the method of scoring adopted was to count the number of study habits he had not acquired. If few had to be developed, then he rated better than if many had to

be developed. This eliminated the tendency of students to become so engrossed in the scoring, that their attention was diverted from the study habits. There was no attention being given to why one study habit rated higher than another.

The second aim in this third revision was to provide immediate follow-up in an attempt to have the students acquire those study habits not already acquired. This follow-up was made possible by the wording. The check-list merely consisted of the rules for good studying. As the student wrote down those study habits he had not acquired, he provided himself with the list of study habits he needed to develop.

The experimental group. The major part of this investigation was done with grade nine students attending a composite school, where the majority were preparing for university or similar advanced educational training. Three hundred could be so classified, and some ninety were taking a business course. The school consisted of five grades beginning with grade nine. This meant that these students were in their first year. The total enrolment exceeded eleven hundred. For purposes of comparison and better standardization, two other groups of students were included in the investigation. The first group consisted of some 500 students taking an industrial course. They

attended a four-year technical school, which also began with grade nine, so that these students were also in their first year. The final group was made up of some 330 students attending a four-year commercial course, which also began with grade nine. The last group was mostly girls, while the technical group was mainly boys.

Procedure. The first step in the investigation was to present the students with the check list, before they wrote their first set of examinations. They read it over and checked those habits not habitual with them. These checked rules were then copied out, preceding each rule with, "I should . . . ". As previously mentioned, the score was the number of rules so listed. Norms were established by taking the scores of the students in the three types of schools described (some 1100 students in all). As all tests administered in these schools are graded according to decile ranking, the norms for this check list were expressed in this form. All distribution of marks were expressed by letter or number representing the decile rating. Table I explains the rating.

The students kept the check-list at the front of their notebooks so that they could refer to them frequently. The counsellor received the written copy of the study habits that needed to be developed.

Each student who failed in two or more of the

TABLE I

DECILE DISTRIBUTION RATING

Letter	Number	Percentile
A		99th percentile
A	10	top decile (best)
B	9	ninth decile
B-	8	eighth decile
C	7	seventh decile
C	6	sixth decile
C-	5	fifth decile
D	4	fourth decile
D	3	third decile
D-	2	second decile
E	1	first decile (poorest)

examinations of the first set was interviewed by his counselor. The counselor went over the study habits the student needed to learn, explaining their importance and how they could be developed. A letter was sent home to the parents, to the effect that this had been done, and urging the parent to look over the study habits the student had checked and to help in having these established.

The "Occupations" teacher then spent one or two lessons with each class on these study habits, and followed this up by having each student check himself each day for a week to see if he was carrying out the study rules.

Measuring the results. Two months after the students had written the first set of examinations, and before they wrote the second set, Wrenn's "Study Habits Inventory" was given to the students, and the next week the third revision of the Study Habits Check List was administered, in the same manner as before. Figure 1 gives the distribution of the results. As no norms are provided for high school students in Wrenn's test, gradings were assigned on the decile distribution as previously outlined. Wrenn's inventory was not administered prior to this for two reasons: (1) until considerable research was done, it was not known, if the investigator's check-list was going to be the final one, and it was deemed inadvisable to administer Wrenn's inventory until

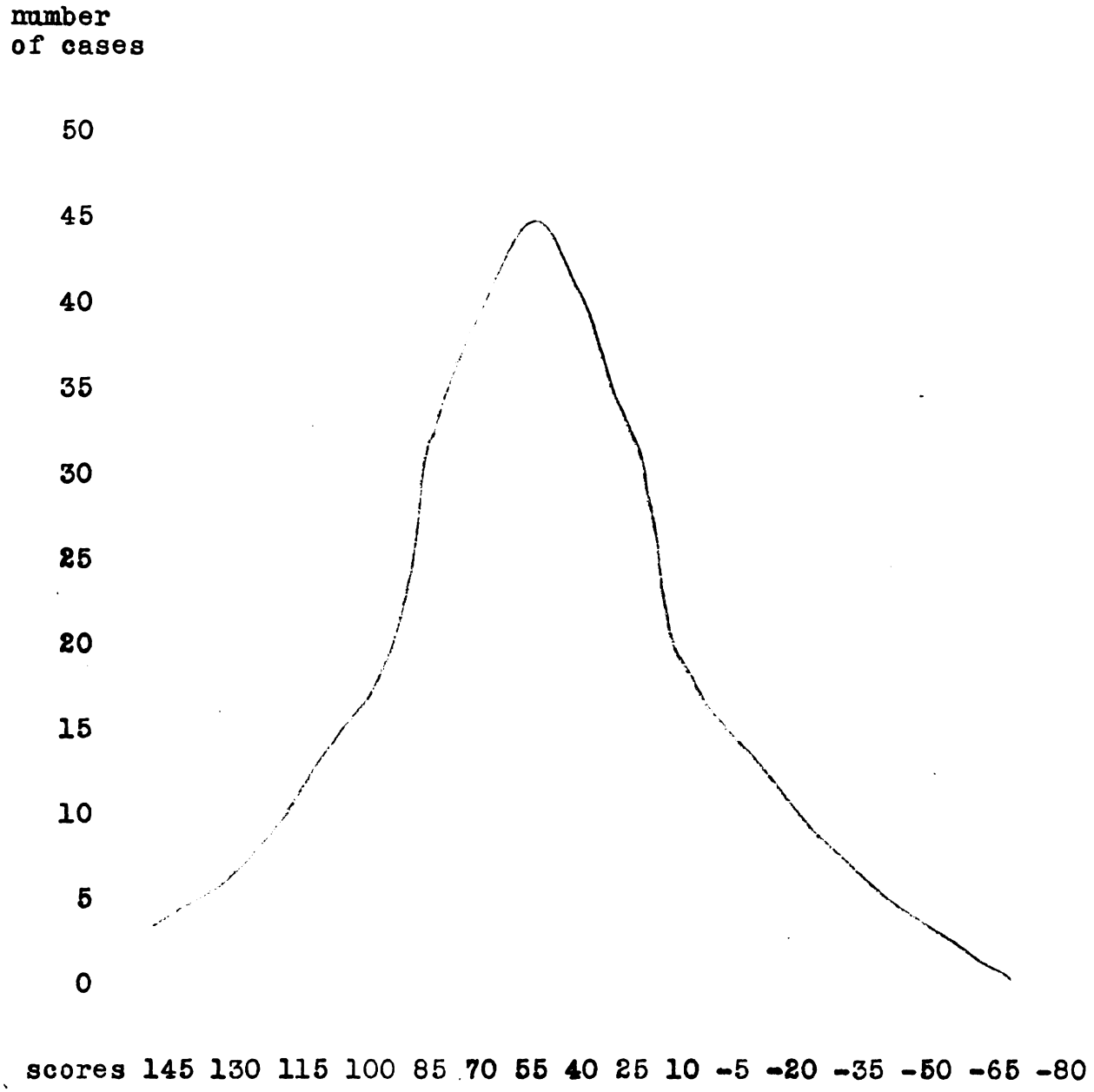

FIGURE 1

DISTRIBUTION OF SCORES OBTAINED BY EXPERIMENTAL GROUP ON WRENN'S STUDY HABITS INVENTORY

this was established (2) so many tests had been given to establish the final one to be used, it was felt better to postpone Wrenn's.

A comparison was then made of the students who had improved in study habits, to see if they improved as well scholastically in their second set of examinations. An improvement in study habits was measured by the acquisition of new study habits. An improvement in scholastic achievement was measured by a better average mark in the second set of examinations. In ranking his academic achievement, the decile distribution was again used, so that a student ranked A or ten, was in the top or best group according to his average in school marks. This group consisted of about thirty-five of the total 350 students of the experimental group. A student ranked E or one, would be in the bottom group according to his school marks. There would again be approximately thirty-five students in this group.

Students with an I.Q. of 120 or better according to the Henmon-Nelson Test of Learning Ability (two alternative forms were administered for this purpose) were compared as to how they ranked in academic achievement and in study habits. Students with an I.Q. of less than 100 were similarly compared, and also the small group with an I.Q. of 140 or higher.

The study habits of students with I.Q.'s over 114 and with academic marks averaging less than 60 were compared with the study habits of students with I.Q.'s less than 100 and with academic marks averaging over 70. The purpose of this comparison was to see if there was a marked difference in the study habits of these two groups. If such was found to be the case, then the conclusion might be drawn that the study habits that were under investigation, played an important role in determining the academic success of the students.

Summary. The method used in this investigation was aimed at reducing the number of variables. By using the same group of students throughout the experiment, rather than attempting to use a control and non-control group, it was hoped to keep to a minimum the variations in home conditions, emotional stress and strain, home study facilities and many other factors that affect study habit efficiency. It would be impossible to equate a control and a non-control group in terms of all these factors. It was felt that learning ability would affect the acquisition of new study habits. The students with high learning ability were compared, therefore, with the students of low learning ability to see if those of each group who improved in study habits, also improved in scholastic achievement. The next chapter gives the results

of these comparisons and the total findings of the experiment.

CHAPTER IV

DISCUSSION OF FINDINGS

In discussing the findings, the test developed for the experiment is compared with Wrenn's test to see the correlation. To attempt an evaluation of the separate study habits, the results of students with high learning ability and low academic achievement, are compared with the results of students with low learning ability and high academic achievement. The study habits of the students in the three types of schools are compared. Finally, comparisons are made of students who improved study habits and students who improved academic achievement. The results follow.

The test. The test used (third revision) served well the purpose of the investigation. It brought to the attention of the students, those study habits they needed to develop. It provided the counselor and parent with a list of study habits that the student had not acquired. This in turn enabled the counselor or parent to follow-up the test with an attempt to have the student develop these habits. The form in which the study habits test was prepared, made it easy to do remedial work in developing good study habits. The result was a complete unification of test, study-habit development and follow-up. Throughout the effort to develop good study habits, the student was continually aware of the study habits he needed to

develop.

Validation of the test. Comparing the results of the test used, and the results of Wrenn's Study Habits Inventory used on the same students at almost the same time it was noted that most of the results were the same. However, further examination was made of the results that did differ. Table II gives this comparison. From results generally it was discovered that students with high learning ability rating and high rating in study habits, achieved high rating academically. This varied proportionately according to the variation in rank both in learning ability and study habits. Where the I.Q. rating (learning ability) was low, it was generally found that it required a higher study habits rating to achieve a good academic rating. If an examination is made of the cases where a wide difference existed in the two tests of study habits, as shown in Table II, it will be seen that the Study Habits Test seems to possess more validity for these high school students. A rough comparison can be made by adding the I.Q. rating and the Study Habits Rating, dividing by two and comparing this to the School Marks Rating. A similar comparison can be made by adding the I.Q. rating and the Wrenn's Test Rating, dividing by two and comparing this to the School Marks Rating. If these two calculations are made for each student listed, it will be seen that the

TABLE II

COMPARISON OF WIDELY DIFFERING DECILE RATINGS

on STUDY HABITS TEST and

WRENN'S STUDY HABITS INVENTORY

Student	I.Q.	Study Habits Test	Wrenn's Test	School Marks
CBA	10	8	4	8
MLA	5	9	2	6
BOA	8	9	3	7
ESA	10	7	4	10
WAB	8	6	1	7
RCB	4	10	5	8
JRB	9	8	4	10
DRB	9	8	3	10
JSC	3	10	5	7
JAD	5	10	4	8
JKD	10	5	10	8
RPD	4	9	5	9
BSD	8	9	4	7
SSD	3	8	1	4
ATD	1	9	5	5
MAE	9	6	2	8
CDE	10	7	3	10
IGE	6	9	3	7
RAF	7	3	8	6
RBF	6	3	7	3
BHF	9	10	3	7
MLF	7	9	4	10
KOF	9	9	5	9
WBF	1	3	8	2
ABCB	1	9	3	5
JCCB	4	6	2	9
CDCB	2	6	2	8
SFCB	8	7	1	8
LGCB	4	9	3	10
RSCB	3	9	1	8

Note: The above numbers refer to the decile group in which the student ranked in each respective test.

Study Habits Test seems more reliable. For example, in CBA, applying the above calculation using the Study Habits Test we get I.Q. 10 plus Study Habits Test 8 divided by 2 is 9. Using the Wrenn's Test we get I.Q. 10 plus Wrenn's Test 4 divided by 2 is 7. The School Marks Rating is 8 so the calculation is within 1 in both cases. Carrying out this same comparison in each case, it will be beheld that the Study Habits Test gives much closer correlation in twenty-seven of the thirty cases where a wide difference in the two tests exists.

Relative Importance of items. In order to see which study habits seemed to be the most important, a comparison was made of (a) the study habits of students who had a high learning ability rating and low academic achievement and (b) the study habits of students with a low learning ability rating and high academic achievement. For the first group, there were so few in the tenth or ninth decile of the learning ability distribution who had low academic achievement that students in the eighth decile were used. For the second group there were so few in the first or second decile of the learning ability distribution who had high academic achievement, that students in the third decile were used. Comparing these two groups, it was found that the following study habits seemed to have been acquired by the group with low learning ability and high

academic achievement and not by the group with high learning ability and low academic achievement.

1. Keeping a neat well-organized notebook.
2. Writing assignments down when given.
3. Studying at the same time each day.
4. Studying at the hardest subject first.
5. Reviewing difficult subjects the next day.
6. Not daydreaming when supposedly studying.
7. Keeping the mind on what was being studied.
8. Avoiding the necessity of rereading to get meaning.
9. Spending 1½ hours studying, five times a week.
10. Reviewing when assigned homework that was given did not require 1½ hours.
11. Writing notes and examinations legibly without abbreviations.

There are obvious reasons for the above, but these are not the direct concern of this study. The important points for this investigation are (a) that neglect of the above habits apparently results in low academic achievement, even though one has high learning ability (b) that acquisition of the above habits apparently results in higher academic achievement, even though one has low learning ability.

The study habits most neglected by all students were:

1. Making a study time-schedule.
2. Keeping a list of difficult words.
3. Reviewing periodically.
4. Going over difficult assignments the next day.
5. Reviewing when assigned homework takes less than 1½ hours.
6. Spending 1½ hours studying, five times a week.
7. Summarizing the facts of reading assignments.
8. Underlining important statements.
9. Not daydreaming when supposedly studying.
10. Writing assignments down when given.

This comparison was made before the remedial work was done to improve their study habits.

The study habits most neglected by girl students were:

1. Avoiding chewing gum or eating while studying.
2. Reviewing periodically.
3. Spending 1½ hours studying, five times a week.
4. Studying at the same time each day.
5. Sitting in a straight-backed chair to study.

The study habits most boys neglected were:

1. Avoiding too many outside interests.
2. Not wasting time.
3. Selecting important points in reading.
4. Reviewing periodically.

5. Spending 1½ hours on homework, five times a week.

Comparison of the three groups. In comparing the students in the three types of collegiates or schools, it was found that the students in the academic school had the best study habits and the students in the technical or vocational school had the next best study habits. This is to be expected as the commercial school offers a more practical course, as does the technical or vocational school, and since the study habits test was designed for students in the academic course. The decile distribution of the results of the study habits test for each school was calculated separately, as shown in Table III, but as the main part of the investigation was carried on with the academic students, their rating was used for comparison purposes. All other decile distributions were similarly calculated on the the academic group (between three and four hundred students). Table IV gives the distribution of the decile rating for Wrenn's Study Habits Inventory (for this academic group). Table V gives the distribution of the decile rating for the two forms of the Henmon-Nelson Test of Learning Ability. Table VI gives the decile distribution of the average marks obtained by each student on the first and second set of examinations. Table VII shows the improvements in study habits and academic achievement by the high learning ability group.

TABLE III

COMPARISON OF DECILE DISTRIBUTION OF

STUDY HABITS TEST

decile group	Academic group	Commercial group	Technical group
10	3 or less	6 or less	3 or less
9	6	7	5
8	7	8	7
7	8	9	9
6	9	10	10
5	10	11	11
4	11	13	13
3	12	15	15
2	13	18	18
1	14 or more	19 or more	19 or more

Academic group consisted of about 350 students

Commercial group consisted of about 300 students

Technical group consisted of about 500 students

This table shows the number of study habits not acquired by each respective decile group.

TABLE IV

DECILE DISTRIBUTION OF

WRENN'S STUDY HABITS INVENTORY

DECILE GROUP	SCORE
10	100 or more
9	80
8	60
7	50
6	40
5	30
4	20
3	0
2	-20
1	lower than -20

The above decile distribution is for the academic group.

In each case, the score given is the minimum for that particular decile group.

TABLE V

DECILE DISTRIBUTION OF

HENMON-NELSON TEST OF LEARNING ABILITY

DECILE GROUP	SCORE
10	120
9	115
8	112
7	108
6	105
5	103
4	100
3	95
2	below 90
1	below 85

The above decile distribution is for the academic group.

In each case, the score given is the minimum for that particular decile group.

TABLE VI

DECILE DISTRIBUTION OF

OF ACADEMIC AVERAGES

DECILE GROUP	SCORE	
	first semester	second semester
10	76	77
9	73	72
8	69	69
7	66	67
6	64	65
5	62	63
4	59	60
3	56	57
2	52	51
1	below 52	below 51

In each case, the score given is the minimum for that particular decile group.

TABLE VII

IMPROVEMENTS OF HIGH LEARNING ABILITY GROUP

IN STUDY HABITS AND ACADEMIC ACHIEVEMENT

student	improvement in study habits	improvement in marks	comment (improvements are in decile ranking)
CBA	1	2	
ELA	0	2	
ESA	-1	0	in top group each time
BWB	4	0	in top group each time
MMC	1	1	
NOC	1	1	
HSC	0	0	
RCD	3	2	
JKD	-2	-1	appointed projectionist
MBeC	1	0	
MBdE	1	1	
CDE	3	0	in top group each time
HFE	2	1	
AHE	2	0	
DJE	0	0	
DLE	4	2	
BHF	5	1	
MLF	0	0	in top group each time
JECA	-1	-1	
JCCB	1	1	

Table VII lists all the students in the academic group with an I.Q. of 130 or higher except two. These two improved in their study habits but as they both ranked in the top decile for school marks, no improvement could be shown in academic achievement. The I.Q. was obtained by administering the two forms of the Henmon-Nelson, and where there was not close agreement, the Dominion Achievement Test of Learning Ability.

From an examination of Table VII, it was found that the students with the high learning ability, who had improved in study habits, had generally improved in academic achievement. Fifteen, or 68% improved in study habits. Of these, 13 or 86% improved in academic achievement. Although this is a very high percentage, it still does not show the actual improvement, as seven of these students were in the top decile of academic achievement at Christmas and therefore could not show improvement in ranking in this respect. One student was appointed projectionist, just after Christmas when he had finished the first set of examinations. This made demands on his time and interests, which would affect his studies. Except for this one student, there were only two others whose study habits declined and only two who improved their study habits and did not improve their decile ranking in academic achievement. One of these students

did actually improve his average marks, but not sufficiently to better his decile ranking. This means that all but one of the students with high learning ability, who improved in study improvements, also improved in academic achievement.

Students with high academic achievement. Examining the learning ability decile rating and the study habits decile rating of those students who had seventy per cent or more average on the first set of examinations, as shown in Table VIII, it was found that very few rated low in either learning ability or study habits. Only seven per cent rated low in study habits. Of this seven per cent, who rated low in learning ability, there were only half of them taking an academic course. Of this thirty-four per cent who rated low in study habits, only two-thirds were taking an academic course. Only ten per cent of those who rated low in learning ability, rated low in study habits. Expressing this the other way, it means that eighty-three per cent of those that had good marks had good learning ability and sixty-six per cent had good study habits, in spite of the fact that one would not expect students with high learning ability to need as good study habits to obtain good academic achievement.

TABLE VIII

LEARNING ABILITY AND STUDY HABITS

OF STUDENTS WITH BEST SCHOOL MARKS AT CHRISTMAS

(expressed in decile ranking)

student	first semester average	learning ability	study habits
DGA	70	9	9
LLA	77	9	10
BLA	74	7	9
DNA	71	7	10
GPA	71	8	10
ESA	76	10	8
NFB	74	3	3
GHB	80	5	8
GLB	74	5	6
PPB	75	1	1
JRB	79	9	5
DRB	79	9	7
BTB	74	9	2
BWB	85	10	1
BAC	78	5	1
TAC	71	9	5
MBC	71	1	1
SLC	77	9	7
MGC	75	10	1
SMC	75	5	9

student	first semester average	learning ability	habits of study
MMC	70	10	6
DSC	73	9	2
HSC	78	10	1
JCD	80	5	5
SCD	72	9	7
VCD	75	9	9
EFD	75	9	9
JKD	73	10	7
HLD	70	2	3
EMD	80	9	4
RMD	71	7	5
PMD	75	5	3
BPD	70	7	2
RPD	73	4	7
MAE	71	9	1
MBE	72	10	2
CDE	81	10	3
JFE	71	7	7
WGE	75	9	10
AHE	72	7	7
MME	78	10	10
DME	72	6	9
KRE	75	7	4

student	first semester average	learning ability	study habits
VSE	73	7	8
ESE	76	7	9
MBF	72	5	5
DCF	76	9	1
YCF	74	7	7
JGF	74	9	7
JGF	71	9	3
BIF	74	9	8
KKF	74	9	10
MLF	76	7	9
NMF	80	9	2
KOF	74	10	4
JRF	80	10	9
MRF	76	7	8
BRF	75	9	7
LSF	74	4	7
ASF	76	9	8
SACA	77	9	3
HSCA	70	4	6
KACB	70	10	8
JCCB	74	4	7
LGCB	77	4	7
JHCB	77	7	4
LKCB	74	2	8

You would, however, expect both to tend to be found together. It would appear from this investigation, that learning ability is the chief determinant of academic achievement, as the group with high learning ability were practically the same group as those who achieved higher scholastically, but it would also appear that study habits play a very important part in determining scholastic success. This is further substantiated later in this report, by other comparisons that were made, but just based on the results given above for all the students who averaged better than seventy per cent on their Christmas report, it is quite convincing.

Comparing improvements in study habits and in academic achievement. (a) Students with high learning ability. The students classed in the tenth and ninth or two top deciles according to their learning ability tests, were compared (a) as to improvement in study habits and (b) as to improvement in academic achievement. These comparisons are shown in Table IX. Seventy-five per cent of these students improved in the decile rating of their study habits, and fifty-nine per cent in the decile rating of their academic achievement. This signifies even more than the mere percentages indicate, since there were approximately thirty-five students in each decile group and in order to show an improvement in decile rating, a

TABLE IX

IMPROVEMENT IN STUDY HABITS AND SCHOOL MARKS

BY STUDENTS OF GOOD LEARNING ABILITY

(test results given in decile ranking)

	STUDY HABITS			SCHOOL MARKS		
student	1st test	2nd test	improvement	1st test	2nd test	improvement
PBA	5	10	5	5	7	2
MBA	9	10	1	3	6	3
CBA	7	8	1	6	8	2
DGA	7	9	2	8	9	1
LLA	10	10	0	10	10	0
ELA	9	9	0	2	4	2
BOA	6	9	3	4	7	3
GPA	9	10	1	8	10	2
ESA	8	9	1	8	9	1
WAB	3	6	3	3	7	4
BGB	8	10	2	6	8	2
BLB	9	9	0	7	6	-1
KMB	8	7	-1	3	1	-2
JRB	5	8	3	8	10	2
DRB	7	8	1	9	10	1
BTB	2	7	5	9	9	0
BWB	1	5	4	10	10	0
TAC	5	6	1	8	10	2

	STUDY HABITS			SCHOOL MARKS		
student	1st test	2nd test	improvement	1st test	2nd test	improvement
DBC	9	10	1	5	8	3
BDC	9	10	1	7	8	1
JGC	7	6	-1	1	1	0
SLC	7	7	0	10	10	0
MMC	7	7	0	2	3	1
MM1C	6	6	0	10	10	0
NOC	5	6	1	4	5	1
DSC	2	6	4	9	10	1
HSC	1	1	0	10	10	0
DCD	7	7	0	9	10	1
RCD	6	9	3	6	8	2
VGD	7	9	2	9	10	1
DDD	2	3	1	6	7	1
BFD	9	10	1	9	10	1
FHD	7	8	1	8	10	2
CHD	2	4	2	8	10	2
JKD	7	5	-2	9	8	-1
EMD	4	6	2	9	10	1
BSD	6	9	3	4	7	3
RSD	6	7	1	4	6	2
BSD	7	9	2	5	7	2
CWD	3	6	3	1	3	2
MAE	1	6	5	8	8	0

student	STUDY HABITS 1st test	2nd test	improvement	SCHOOL MARKS 1st test	2nd test	improvement
MAE	1	6	5	8	8	0
MBE	2	3	1	8	8	0
HFE	5	7	2	3	4	1
IGE	8	9	1	5	7	2
DLE	4	8	4	6	8	2
DCF	1	4	3	8	10	2
JDF	8	9	1	8	9	1
JGF	7	8	1	9	9	0
JG1F	3	9	6	8	8	0
RGF	9	10	1	7	7	0
IMF	7	10	3	1	4	3
NMF	2	9	7	10	10	0
KOF	4	9	5	9	9	0
JRF	9	10	1	10	10	0
GRF	3	9	6	7	7	0
JSF	5	10	5	7	9	2
DSF	4	6	2	7	7	0
BRF	7	9	2	9	10	1
WFG	5	7	2	2	2	0
SACA	3	9	6	10	10	0
KPCA	3	7	4	6	5	-1
BSCA	2	8	6	2	2	0
RWCA	3	8	5	6	6	0

	STUDY HABITS			SCHOOL MARKS		
student	1st test	2nd test	improvement	1st test	2nd test	improvement
GRF	3	9	6	7	7	0
JSF	5	10	5	7	9	2
DSF	4	6	2	7	7	0
ASF	8	8	0	10	9	-1
BRF	7	9	2	9	10	1
WFG	5	7	2	2	2	0
BSG	6	7	1	3	5	2
SACA	3	9	6	10	10	0
KPCA	3	7	4	6	5	-1
BSCA	2	8	6	2	2	0
RWCA	3	8	5	6	6	0
BACB	6	8	2	3	5	2
SFCB	6	7	1	7	8	1
JMCB	8	9	1	5	6	1
NWCB	7	8	1	5	6	1

student may have to obtain a higher mark than thirty-five other students who previously had a higher mark than he had and who also may have improved their study habits and consequently their academic achievement. With this in mind, it is indeed significant to find such a large percentage (fifty-nine) actually accomplishing this very thing. Another factor, which also must be borne in mind, is that many of these students ranked in the top decile in the first test and, therefore, could not show improvement in ranking, although they may have had improvement in achievement. If the improvement had been taken on the actual increase in the average marks, the percentage would have been many times higher, but this would not have been in keeping with the method used in this investigation, that of the decile distribution.

Of these same students (those in the ninth and tenth groups of the decile distribution for learning ability) only ten per cent showed a decrease in the decile ranking of their academic achievement. Of this ten per cent that showed a decrease in academic achievement, thirty per cent had also shown a decrease in study habits and only one of the entire group had shown an increase in study habits.

Examining the records of the students ranked in the tenth and ninth deciles according to learning ability and who improved their study habits, TABLE X, it is found

	STUDY HABITS			SCHOOL MARKS		
student	1st test	2nd test	improvement	1st test	2nd test	improvement
BACB	6	8	2	3	5	2
JM	7	8	1	5	6	1
NW	7	8	1	5	6	1
CB	7	8	1	5	6	1

that of those for whom we have a complete record, eighty-two per cent of all students with this learning ability rating can be so classed (i.e. showed improvement in study habits), and that sixty-six per cent of these also increased in the decile rating of their academic rating. Only one student regressed. This student was not taking an academic course, and also failed to complete the course she was taking. An interview with this student indicated an underestimating on her first test, so that her second test was not really improved to the extent given. There was also an emotional upset in the home, just after the first set of examinations, which led to a withdrawal from the course. This upset may have caused the decrease in academic achievement.

As previously pointed out, the above high percentage of increase in academic achievement is indeed most significant, when one bears in mind the two facts (a) that many of the students had been in the top decile group in academic achievement in the first set of examinations and therefore could not show any improvement in decile ranking and (b) that to show any improvement it might mean doing better than thirty-five other students who had previously ranked better and who may have improved their study habits with increasing academic achievement. As was also previously pointed out, there were other dis-

tracting factors involved, such as the student who was appointed as projectionist and lost much study time.

Looking at the records of those students in the two top deciles of learning ability distribution, who did not improve in study habits, as shown in Table XI, (eighteen per cent), ninety per cent failed also to improve in academic achievement and thirty per cent actually regressed. These figures are just as significant as those for the group that did improve. Here was a small group of students, who failed to improve their study habits, when the majority of their group did, with the result that they also failed to improve their academic standing, and in many cases lowered it. Again two facts must be remembered, that increase the significance of the above figures (a) that a decrease of one on the Table (Table XI), actually means a lowering of the average mark on ten or more examinations to such an extent that they rank in a lower decile. This, in turn, may mean a lower average mark of an entire decile group, or of thirty-five students who previously were lower but now are higher, (b) that some of those students listed as not decreasing in decile rating, could not do so as they were already in the lowest rating. Then again there were other extenuating circumstances that were bound to occur and which greatly influenced the gradings. The father of one student died very suddenly

TABLE XI

ACADEMIC IMPROVEMENT OF STUDENTS OF GOOD LEARNING ABILITY WHO DID NOT IMPROVE STUDY HABITS

	STUDY HABITS			SCHOOL MARKS		
student	1st test	2nd test	improvement	1st test	2nd test	improvement
MBA	10	9	-1	6	6	0
LLA	10	9	-1	10	10	0
GPA	10	9	-1	8	10	2
KMB	8	7	-1	3	1	-2
JGC	7	6	-1	1	1	0
SLC	7	6	-1	10	10	0
CKD	10	9	-1	1	1	0
JKD	7	5	-2	9	8	-1
MME	10	8	-2	10	10	0
MMaE	10	6	-4	7	6	-1

from a heart attack.

Comparison of improvement in study habits to academic achievement. (b) Students with low learning ability. The group that ranked in the lowest decile according to their tests in learning ability were compared in the improvement they made in decile rating as to (a) study habits and (b) academic achievement. This comparison is shown in Table XII. Some of these students dropped out of school before the investigation was complete. However, complete records were obtained for twenty-six students. Of these twenty-six students, seventeen or sixty-five per cent improved in their study habits, and eight students, or over thirty per cent, improved in academic achievement. Two students regressed in their study habits, and in both cases they regressed in their academic improvement even more. Seven other students made no improvement in their study habits and in the case of all but one, no comparative improvement was made in academic achievement. In the case of this seventh student his academic achievement regressed.

Comparing these results to the results obtained with the students who ranked high in learning ability, (see Table IX) it was found that the improvement in study habits and in academic achievement was not as great. It was also found that the improvement in study habits did not result

TABLE XII

IMPROVEMENT IN STUDY HABITS AND SCHOOL MARKS

BY STUDENTS OF LOW LEARNING ABILITY

	STUDY HABITS			SCHOOL MARKS		
student	1st test	2nd test	improvement	1st test	2nd test	improvement
ABCB	9	9	0	5	5	0
CDCB	6	6	0	8	8	0
LKCB	8	8	0	9	9	0
BHA	9	8	-1	5	2	-3
HMB	4	10	6	1	1	0
HOB	1	7	6	1	1	0
CSB	9	9	0	1	1	0
TLC	9	8	-1	3	1	-2
JWC	1	5	4	3	6	3
NGD	1	5	4	3	3	0
NKD	2	5	3	1	2	1
HLD	3	5	2	8	8	0
MMD	4	6	2	1	2	1
ATD	5	9	4	1	5	4
HAE	1	3	2	2	2	0
RGE	3	4	1	2	1	-2
AHE	4	6	2	4	4	0
CME	6	9	3	2	2	0
BSE	5	8	3	6	7	1
ATE	4	7	3	5	8	3

	STUDY HABITS			SCHOOL MARKS		
student	1st test	2nd test	improvement	1st test	2nd test	improvement
HWE	9	9	0	2	2	0
AFG	2	8	6	1	7	6
NDCA	4	4	0	4	4	0
BHCA	5	5	0	6	4	-2
JMCA	3	5	2	6	5	-1
MOCA	4	5	1	2	3	1

in a corresponding improvement academically.

Examining the record of those students (a) ranked in the first or lowest decile (according to the tests of learning ability) and (b) who improved in study habits, as shown in Table XIII, it was found that sixty-nine per cent of this learning group could be so classed (i.e. improved in study habits) and that of these; forty-three per cent also improved their decile ranking of academic achievement. This was a gain of much more significance than it appeared, as many of those showing no apparent increase in their academic actually did improve, but as they were in the lowest decile ranking, it migh mean a considerable improvement in order to obtain a higher decile ranking. It is a more difficult thing to increase the decile ranking from the lowest for if you are in the lowest group, it must mean that you have not learned adequately what has been taught in the first semester. If you have not learned adequately what has been taught in the first semester, it is unlikely that you will do well in the second semester, since you are building continually on what has been taught. This is particularly true in grade nine in such subjects as French and Algebra. If the student has not learned the fundamentals in the first semester, it makes it very difficult to get a good mark in the second semester.

TABLE XIII

ACADEMIC IMPROVEMENT OF STUDENTS OF LOW LEARNING ABILITY WHO IMPROVED STUDY HABITS

	STUDY HABITS			SCHOOL MARKS		
student	1st test	2nd test	improvement	1st test	2nd test	improvement
HMB	4	10	6	1	1	0
HOB	1	7	6	1	1	0
JWC	1	5	4	3	6	3
NGD	1	5	4	3	3	0
NKD	2	5	3	1	2	1
HLD	3	5	2	8	8	0
MMD	4	6	2	1	2	2
ATD	5	9	4	1	5	4
HAE	1	3	2	2	2	0
RGE	3	4	1	2	1	-1
AHE	4	6	2	4	4	0
CME	6	9	3	2	2	0
ATE	4	7	3	5	8	3
AFG	2	8	6	1	7	6
JMCA	3	5	2	7	6	-1
MOCA	4	5	1	2	3	1

Examining the record of those students (a) ranked in the first or lowest decile according to the tests of learning ability and (b) who improved in study habits, as shown in table XIV, it was found that none had improved their decile rating of academic achievement and two had actually regressed. Summarizing the results of this group (thirty-three per cent), those that remained the same in study habits remained the same in academic achievement. Those, who were poorer in study habits, were poorer in academic achievement (except where they were in the lowest group and therefore could not rate lower.

This chapter has given the actual findings of the investigation. The findings have been broken down to those with high learning ability, and those with low learning ability. Each of these groups have been broken down to those who improved in study habits, and those who failed to improve in study habits. The academic achievement of each of these small groups has been examined. The results of this investigation and the conclusions that seem to be evident will be given in the next chapter.

TABLE XIV

ACADEMIC IMPROVEMENT OF STUDENTS OF

LOW LEARNING ABILITY WHO DID NOT IMPROVE STUDY HABITS

	STUDY HABITS			SCHOOL MARKS		
student	1st test	2nd test	improvement	1st test	2nd test	improvement
CDCB	6	6	0	8	8	0
LKCB	8	8	0	9	9	0
BHA	9	8	-1	5	2	-3
JFE	9	6	-3	1	1	0
HWE	9	9	0	2	2	0
NDCA	4	4	0	4	4	0
TLC	9	8	-1	3	1	-1

CHAPTER V

SUMMARY AND CONCLUSIONS

Several general conclusions were made from the results of this investigation. These were general observations, based entirely on this limited survey and need to be further substantiated by much more extensive research.

As for the principle aim of this study, it seemed to have been accomplished. The survey definitely showed that, with few exceptions, improvement in study habits brought about improvement in academic achievement. This was very much evidenced in spite of the fact that one must know more or have greater skill to even maintain the same academic standing for all the second semester as for the first.

Several other observations were worthy of note. Students who ranked higher in tests of learning ability showed greater improvement in study habits and as a result of their improved study habits showed greater academic improvement. Learning ability was the greatest factor in bringing about academic improvement through improving study habits. (You can't make a silk purse out of a sow's ear).

A general observation, which was not an object of the investigation when it was first planned, was so obvious

mention should be made of it. Throughout the survey, it was repeatedly seen that students as a whole, who did well on tests of learning ability, also did much better in their school examinations. This was observed in examining the average school marks of students in the top two deciles and those in the lowest two deciles of the distributions made from the results of the learning ability tests. There were exceptions to this but the few exceptions were principally students taking a commercial or less academic type of course.

Another observation was that students as a whole, in the academic type of course, preparing for college or similar post high school graduation courses, had better study habits than those students in the commercial and technical types of schools.

The survey proved quite conclusively, that study habits of high school students could definitely be improved. To go even further than this, study habits could be improved without too much time being devoted to improve them. By using some such method as was used in this experiment, a very small amount of time is needed. In this case, needless repetition, duplication and work at cross-purposes, were eliminated, because the test was also used for developing the desirable study habits. The test results were the basis for all interested parties to bring

about improvement. It was not just a case of different people saying in different ways, "Do this.", but of them all saying it the same way, showing why it should be done, following up the matter by seeing that it was done, and finally proving that when it was done a most worth while result followed.

The investigation suggested further research along several lines. This investigation did not prove that the study habits that were encouraged were the most important to be developed. If a large scale investigation could be carried out of the many study habits, much valuable information would be gathered, a better test developed, and greater results would follow. It would have to be a large scale investigation so that a large number of students might be selected, who did not possess a certain study habit. If it were possible to have them maintain their study habits while half the group developed just this one certain study habit, then by comparing the academic achievement of those who developed this additional study habit, with those who did not, it would be seen how effective was this one certain study habit. This would have to be done with all the study habits to find their relative importance.

A further follow-up to the program that was carried on would be to put on a study schedule, those students who

rated high on tests of learning ability but rated low in study habits and academic achievement. These students would not just be checked for a week, as was done with this study, but continually checked until they wrote another set of examinations.

This investigation was carried on in grade nine, where it was felt, good study habits should start to be developed. This study should be followed up to see, if the study habits developed in grade nine are continued in the higher grades. Investigation is also needed to see, if the development of these study habits in the upper grades of the high school bring as much academic improvement as they did in this study with grade nine students.

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APPENDIX

APPENDIX A

A STUDY HABITS CHECK LIST

(first revision)

After each statement that applies to your present method of study, place a check mark.

score		
-5	5	1. I have never enjoyed reading: I find books boring except for mystery and love stories.
-4	4	2. I don't really like using the Public Library; you have to keep quiet when you go there.
-2	2	3. I know some students buy books for their personal libraries; but for me that would merely be a waste of money.
-2	3	4. I wouldn't ever use the school library if it weren't that we have to do Home Reading.
-1	3	5. I never know where to look for things in a library; yes, I know that there is a catalogue, but it doesn't mean anything.
-2	1	6. The only things which I read regularly in the daily papers are the sporting page and the funnies.
3	-2	7. I like to keep my text books clean and in good condition; some peoples' books are most uninviting with pictures and blots and names scrawled everywhere in them.
2	-1	8. At home, I study in a room by myself.
2	-1	9. I have my own study table or desk.
2	-1	10. I have a good study lamp.
2	-2	11. At home, I can use (a) a good-sized dictionary
2	-1	)b) an encyclopedia or Book of Knowledge
1	-1	(c) an atlas, or globe, or maps
2	-2	(d) at least one daily paper
3	-3	(e) Magazines such as "The Readers Digest" "Saturday Night", "National Geographic"

-3 2 12. I like to study in an easy chair or on the chesterfield or in bed; I prefer to stretch out when I am working.

-2 3 13. Generally, the radio is on where I can listen to it as I study.

-5 4 14. I have never learned how to keep a neat, well-organized notebook.

-4 2 15. I frequently find myself in class without such things as paper, pencil, pen, and have to borrow.

-1 2 16. I like to have a box of candy, or some apples to eat, or else I chew gum while I work.

3 -1 17. I find I do better work, if I make a home-study timetable week by week.

1 -1 18. I find it is a good idea to write down my homework assignments and the date they are due in my notebook; I keep a page especially for that purpose.

4 -3 19. I try to arrange to do my studying in the same place and at the same time everyday; I find I get the habit of doing it that way and it seems easier.

20. Before I begin to study, I make sure that I have all the things within reach that I am going to need.

1 -3 (a) textbooks
1 -2 (b) notebooks
1 0 (c) scribbling paper
2 -2 (d) pencil
1 -1 (e) pen and ink
1 -1 (f) dictionary

2 -1 21. I find I accomplish most by doing my hardest subject first and leaving the easiest to finish up with.

2 -1 22. I find it helps me to remember things, if I underline important statements in my texts.

3 -1 23. I try to make a summary of the facts I read in an assignment; it helps me to memorize them.

,4	-3	24. To refresh my memory, I usually go over a difficult assignment the next morning, after I have studied it.
4	-2	25. I spend some time every week in reviewing the new work studied in the preceding week.
3	-2	26. When I find words in my reading that I do not know, I like to try to guess their meaning from their context or derivation instead of looking them up in the dictionary.
-2	3	27. I frequently study in a room where the rest of the family are talking or where the radio is playing.
-4	4	28. I don't bother working at the things I find difficult or don't like; I get the answers from someone else in the class before school.
3	-2	29. If I have planned some entertainment for an evening during the week, I make a point of getting my work done before I go out.
-3	4	30. When we have study periods in school I am apt to spend half the time whispering to my friends.
-2	3	31. I like to wait for the right mood or inspiration before I can make myself begin to write an essay or do other home work.
-2	1	32. Often there are things we are taught in a lesson that I can't understand; but I'd rather fail than ask the teachers to explain them to me after school.
-3	3	33. I have a tendency to day-dream when I should be studying.
-3	4	34. It takes me half my time to get started; I can't make myself settle down to work.
-5	3	35. I find it hard to keep my mind on what I am studying; often I don't know what I've been reading when I get through.
-2	2	36. I lose a lot of marks in essays and examinations because of bad spelling, punctuation and the misuse of words.

-3 2 37. I read so slowly that I never can get all the assignment finished in an evening.

-1 2 38. I have to reread a page two or three times before it means anything to me; at first it generally seems just a lot of words.

-3 3 39. I have trouble recognizing which points are the important ones in material which I have to read or study.

-4 2 40. I find myself generally too tired and sleepy to do any homework in the evening.

-5 1 41. My home work takes all the evenings during the week; I have no time for fun or the reading I want to do.

-3 1 42. I worry about my school work and don't get much fun out of it.

2 -4 43. I see to it that I spend a reasonable time every day in outdoor exercise and fun with other people.

-3 1 44. I think a student's life is sufficiently important to justify spending a good deal of time on things like movies and games, even when they conflict with school work.

-5 2 45. I am away from school so much that I can't keep up with the work the others are doing.

2 -4 46. When I have been away I make sure I find out either from the teacher or one of the best students what I have missed; and I find time to get it up.

-3 4 47. I go to the movies two or three evenings a week at least.

-3 1 48. My job or the work I have to do around the house leaves me too little time for homework.

-4 4 49. In the crowd I go around with you get to be unpopular if you do too well in school work; I wouldn't like to be thought a really good student.

4 -5 50. My family are interested in my getting as good

an education as possible; they want me to go to University if I can.

Method of Scoring

The student checks those items true in his case.

The score for each checked item is in the first column at the left; the score for the unchecked items is in the second column. Subtract the total of the negative scores from the total of the positive scores.

Grading (for grade nine students)

105 or higher is excellent
85-104 good
50-84 fair
40-49 below average
39 or less is poor

APPENDIX B

REVISED STUDY HABITS CHECK LIST

(second revision)

Here is a list of study habits that will make your studying effective. Read the list carefully, and if there are any habits that you do not practise, write them on a separate piece of paper. Be sure to write down EVERY habit you should have that you now lack. After you finish you will have a chance to rate your studying habits.

1. I have my own study table or place by myself to study.
2. I have a good light by which to study.
3. I don't study in an easy chair, chesterfield or bed.
4. The radio is off where I can't hear it.
5. I keep a neat, well-organized notebook.
6. I seldom study with candy, apples or gum.
7. I make out a study time-schedule.
8. I write down my homework assignments in my notebooks.
9. I study in the same place each day.
10. I study at the same time each day.
11. Before I start studying, I get all materials ready.
12. I do my hardest subject first, and easiest last.
13. I underline important statements in my notebooks.
14. I try to make a summary of my reading assignments.
15. I go over assignments the morning after studying.
16. I spend time each week, reviewing.
17. I seldom study where others are talking.
18. When going out, I get my assignments done first.

19. I don't wait for the mood to start studying.
20. When I don't understand points, I get them explained.
21. I don't daydream, when I should be studying.
22. I start studying without a loss of time.
23. I am able to keep my mind on what I am studying.
24. I can usually get assignments done in an evening.
25. I seldom have to reread a page to get its meaning.
26. I can generally spot the important points in reading.
27. I am seldom too tired or sleepy to do homework.
28. My homework doesn't prevent me doing anything else.
29. I don't worry about school work so that I dislike it.
30. I spend a reasonable time in outdoor exercise.
31. I am not absent so much that I can't get assignments done.
32. When I am absent, I make sure I catch up on work.
33. My outside work still leaves plenty of time for study.
34. Usually I spend 1½ hours on homework, 5 times a week.
35. When assigned homework doesn't take 1½ hours, I review.
36. I write notes and examinations, legibly without abbreviations.
37. I check spelling and meanings of doubtful words.
38. I keep a list of words difficult to spell or remember.
39. I divide my study time so I can work at all assignments.
40. I try to understand each point before going on.

STUDY HABITS

(third revision)

To be successful in any game, you MUST follow the rules. These are the rules for school success. If you observe these rules, you need not worry about your work; you will likely enjoy all your subjects and do well in them.

PART A

1. Attend school regularly.
2. Avoid too many outside interests or jobs.
3. Do school assignments before going out for the evening.
4. After absence, find out what work you missed, and do it.
5. Spend a reasonable time in outdoor exercise.
6. Get assignments done on time.
7. Get sufficient sleep. (eight hours)
8. Do not waste time.
9. Have a place by yourself to study.
10. Write neatly and without abbreviations.
11. Have points you do not understand, explained.
12. Do homework at the same time each day.
13. Keep a neat, well-organized notebook.
14. Write assignments in your notebook, <u>when assigned</u>.
15. Spend some time each week reviewing.

PART B

16. Study in a room without distractions.
17. Understand each point before going on.
18. Study in the same place each day.

19. Underline or write down important points you read.
20. Have a good light by which to study.
21. Have all materials ready before starting to study.
22. Avoid eating candy, fruit or gum, while studying.
23. Begin studying promptly.
24. Check the meaning and spelling of doubtful words.
25. Sit in a straight-backed chair.
26. Spend a fair share of time on each assignment.
27. Do your hardest subject first.
28. Keep your mind on what you study.
29. Read thoughtfully (so that one reading is enough).
30. Spend an hour and a half on homework, five times a week.

APPENDIX D

STUDYING AND SUGGESTIONS

TIME TO SPEND ON HOMEWORK

Grades 9, 10, 11: One to two hours each school day
Grades 12 and 13: Two to three hours each school day

1. In reading have in mind certain definite points you are looking for. Read quickly at first to discover these points.
2. Reread: this time for details and difficulties.
3. Make an outline of the essential points.
4. An hour or two later review your outline. Most forgetting takes place in the first two hours, after learning.
5. Next day, quickly review this outline again.
6. Some ways to judge when you have prepared your assignment well:
   (a) Test yourself by reciting the main points in order.
   (b) Ask yourself the how or why in addition to learning the main facts.
   (c) Try to give the gist of the assignment in a few words.
7. Endeavour to increase your rate of reading. Senior high school students should read about 250 words a minute. If you read more slowly than this, practice reading rapidly under a time limit: say, four to five pages every five minutes. You can increase your speed and gain more from your reading by doing so.
8. Help yourself to concentrate by acting on these points:

(a) Form regular habits of work in a certain place and at certain times. (Not too soon after meals)

(b) Have a definite goal in mind, or a question to answer as you read.

(c) Do not wait for mood or inspiration but train yourself to begin promptly when it comes time to study.

(d) Little can be accomplished in a fifteen minute space. Train yourself to work in time units of 20 - 30 minutes at a stretch. Then allow yourself a five minute recess, if you need it.

9. Budget your study time at home. Consider how much time per day or week you need to spend on each subject and make yourself a time table for the week fitting in the required time. Make yourself observe this time table; then you will feel free to use free time for recreation.

10. Plan your play hours carefully. They are important.

11. Do your studying under the best possible conditions.

(a) Work in a place free from distraction. The radio, for instance, will probably cost you fifty per cent of your study effectiveness.

(b) Try to have a desk of your own where you can keep your study equipment.

(c) In general try to study in the same place and at the same time daily.

(d) The best temperature for doing effective work is about

(e) Have all necessary equipment, such as books, dictionary, paper, pencil on hand before you begin to work. Every time you have to jump up for something you destroy your concentration and waste time.

(f) Have a good reading lamp; the light should come over your left shoulder.

(g) Have a straight comfortable chair.

(h) Take a few minutes for relaxation every 30-40 minutes.

WARNING

These are the most significant causes of failure in school.

1. Lack of effort.
2. Inattention and misbehaviour in class.
3. Lack of interest in a subject.
4. Failure to consult a teacher when help is needed.
5. POOR STUDY HABITS.