THE UNIVERSITY OF MANITOBA

STUDY HABITS AND ATTITUDES OF SEVENTH AND NINTH GRADERS IN A SEMESTER AND A CONVENTIONAL SCHOOL YEAR PLAN

by

FRANCES ANN DAGG

A Thesis

Submitted to the Faculty of Graduate Studies

in Partial Fulfillment of the Requirements

for the Degree of Master of Education

Department of Educational Psychology

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ABSTRACT

The study investigated the effects of organizational plan (semester/full-year), grade (seven/nine), and gender (female/male) on study habits and attitudes at the junior high level. The nine dependent measures examined were: the SSHA-Form H (Brown and Holtzman, 1967), and the evaluative and activity components of four school-related concepts using a self-developed Semantic Differential. Socioeconomic status was identified as a control variable, and achievement and age were identified as covariate variables.

In this investigation, 134 students attending a semester plan school and 194 students attending a conventional (full-year) plan school responded to the evaluative measures.

Product-moment correlations showed that achievement was, to some degree, positively related to study habits and attitudes as measured by the SSHA. An analysis of covariance on the scores of all the dependent measures demonstrated that organizational plan had little effect on study habits and attitudes related to scholastic activity. On six of the nine dependent measures the full-year group demonstrated more positive mean scores, although these differences did not reach statistical significance at the .05 level. Across all dependent measures the grade seven students had, statistically significant, more positive study habits and attitudes as

compared to the grade nine students. Also, on three of the dependent measures female students had significantly more positive study habits and attitudes than their male counterparts. On the remaining six measures, although not statistically significant, the female group means were more positive on study habits and attitudes than the male group.

A smaller independent study, using the results of the 67 grade seven students in the semester plan, investigated the effects on study habits and attitudes due to core course program during the first semester (mathematics/science versus history and geography). An analysis of covariance showed that the type of core course taught had little effect on the study habits and attitudes of these students.

This study implies that organizational planning (semester/full-year) is not the key factor affecting the study habits and attitudes at the junior high level and that the implementation of semester plan at this level is questionable as far as promoting better study habits and attitudes. It supports former studies which claim that a relationship exists between study habits and attitudes and academic achievement. The present study also demonstrated that study habits and attitudes differ between grade seven and grade nine, favoring grade seven, and that female students tend to have more positive study habits and attitudes than male students at the junior high level. Therefore,

continuing emphasis in research should be directed toward the middle years to aid in the development of effective programs to enhance study habits and attitudes of the junior high adolescent. Also, the extreme variations in student characteristics during the adolescent stage may tend to obscure the effects of organizational plan and programs. Thus, other variables affecting student behavior must be investigated.

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Chapter 1

INTRODUCTION

Early Adolescents and Their Education

Educators and psychologists (Coleman, 1961; Kagan and Moss, 1962; Maccoby, 1966) agree that the early adolescent years, ages twelve to sixteen, represent a period of transition. The junior high adolescent is struggling for an independent identity and attempts to discover where he is going in life, what are his strengths and weaknesses, and how he fits into his newly found role. The psychological and social reorientation and the emergence of a more adult mode of intellectual functioning during this developmental period are coupled with rapid physical growth and change.

According to summarized reports of research on the young adolescent such as those by the Manitoba Department of Education (1977) and by Morris and Renihan (1978), these years are noted more than any other period of human development for wide variations within and between the sexes in levels of intellectual, physical, social, and emotional maturity. This stage of life marks a time when many important changes are occurring; the educational system should have an opportunity to contribute significantly to the development of good study habits and attitudes.

Accepting the truth of this statement and in keeping with the present educational concern for the optimum growth and development of the child, a recent shift in educational emphasis in the 1970's has been to consider the subsequent development of the affective as well as the cognitive domain of the learner (Purkey, 1970). The Core Committee of the Manitoba Department of Education (1973) in a report of the reorganization of the secondary school and the Middle Years Program Review Committee (1977) both endorse this approach in education by encouraging educators to pay more attention to students' feelings, attitudes, interests, aspirations, and self-concepts as they are affected by the educational processes and environment. On the basis of this type of thinking and on the hypothesis that changes in our school organizational plan should improve the quality of instruction and learning, the "semester" plan was introduced into many secondary schools and into some junior high schools in Manitoba. The impact of the semester plan on the study habits and attitudes of junior high students is the focus of this study.

Definitions of Terms

Some common terms used in the study have different connotations under varying circumstances. In order to clarify their usage as they pertain to this study a set of definitions follows:

Attitude. An attitude is a predisposition to respond in a certain manner when confronted with certain stimuli (Triandis, 1971).

It is reinforced by beliefs and often attracts strong feeling that will lead to particular forms of behavior according to Oppenheim (1966). An attitude involves what people think about, feel about, and how they tend to behave toward a specific attitude object.

Habit. A habit is a pattern of behavior that through practise has become characteristic and dominant (Good, 1973) for an individual in a given situation. It has become easy and familiar through practise.

Study Habits and Attitudes. Study habits and attitudes indicate the characteristic pattern which an individual follows in academic learning (Good, 1973). Since attitudes cannot be directly observed, they are inferred from overt behavior and/or responses on instruments such as pencil and paper surveys.

Conventional Plan. The conventional school-year plan refers to the traditional mode of teaching all required and optional course material for a class over a full year extending from September to June. The regular day is divided into eight 35-40 minute periods over a six-day cycle. Final evaluation of all courses comes at the end of the school year. A sample schedule of timetabling is included in Appendix A.

Semester Plan. The semester school-year plan refers to dividing the conventional school year into two terms, each of approximately ninety-five days duration. The length of subject instruction time

per day and/or per six-day cycle is doubled; thus, the total number of units of subject matter covered during the conventional term is presented during one semester and the time in school is equivalent. In this way a student has fewer courses during any one term and fewer class changes per day. A student who successfully completes a course of study during the shorter term receives credit for grade completion of the course work as does a student who completes the course during the conventional year. Sample schedules of two class timetables for the first semester are included in Appendix B. These would be reversed in the second semester term.

Six-Day Cycle. A six-day cycle refers to the rotation plan of the timetable. Classes are scheduled and time per subject area is proportioned according to Department of Education requirements on a six-day rotating plan rather than on the five-day Monday to Friday week (Appendices A and B).

Background of the Study

The innovation of dividing the school year by introducing some form of semestering in program scheduling and school organization has received wide acceptance in the United States and Canada. Evaluative research studies conducted by various Departments of Education, school divisions, and universities involved in or acquainted with similar semester plans have demonstrated a positive

and favorable acceptance in general by students, parents, and teachers (Bergen, Friesen, and Ratsoy, 1976; Church, 1968; Horovatin, 1974; Shaw, 1977). However, the specific effects of reorganizing the school-year plan on students' study habits and attitudes related to academic activity have not been fully investigated.

Ellwood (1970) suggests that since the semester plan offers shorter terms and more frequent changes in courses, it should foster improved student-teacher relationships and better work habits, allow for more in-depth study due to longer class periods, and contribute to improved motivation.

Church (1968) states that a more intensive type of instruction such as that permitted by the semester plan results in better achievement, and that the immediacy of the goal increases motivation which is conducive to the formation of good work habits.

Gatewood and Dilg (1975) recommend that learning experiences for the early adolescent be related to immediate rather than remote academic goals and that blocks of seventy or eighty minute periods, such as those made possible by a semester plan, allow for greater flexibility in teaching and learning styles especially in those subjects requiring time for grouping, activity-oriented experiences, and planning of individual tasks or projects.

In response to concerns raised about the effects of school reorganization on academic achievement many research studies have been organized to empirically study the effects of course compression into shorter terms. Bergen et al. (1976) report that in comparative studies by Fehlberg (1968), Girard (1962), and Parks (1974) no cause-effect relationship was found to exist between school-year design regarding compression and student achievement. In studies by Ellwood (1970) and Dupas (1972) improved performance was noted for students under the semester plan. Thus, results of empirical studies on this concern are inconclusive.

A second concern, the effect of increased time lapse between subsequent levels of semestered courses on retention and the loss of learning, encouraged other researchers to design studies and collect empirical data. Results from studies of this nature have demonstrated that the increased time lapse has negligible or minimal effects on retention and recall of previously learned material (Rachar, Rice, and Stennett, 1973; Smythe, Jutras, and Bramwell, 1973; Varner, 1968).

The third area of concern is that of the effects of semestering on the students' affective behavior. Although attitude questionnaires have been used to assess the impact of semestering on study habits and attitudes, many of these have investigated only the senior high level. Also, it seems probable that factors often attributed

to semester planning, such as having fewer courses, more immediate goals, and longer class periods, should affect study habits and attitudes to some degree. Therefore, the present study was designed to compare the study habits and attitudes of junior high adolescents in a semester and a conventional school-year organizational situation.

Need for the Study

According to student opinion surveys, the semester plan is seen as a more favorable learning environment (Bergen et al., 1976; Bramwell and Mann, 1973; Horovatin, 1974; Shaw, 1977), and professional opinion contends that students become more efficient learners under favorable learning conditions.

> Under good conditions of learning students put more of their class time into purposive activity (related to the learning activity) while under less favorable classroom conditions students tend to decrease the percent of time in class they are putting into purposive learning activity. (Bloom, 1974, p. 686)

Also, conditions generally resulting from semester planning such as more frequent evaluation and feedback and longer periods of daily pupil-teacher contact suggest that learning conditions are improved by semestering.

> ...as students are provided with feedback on what they have learned over a particular learning task and they are given additional time to correct their difficulties, they enter the next learning task with a better grasp of the preceding learning tasks in a series. (Bloom, 1974, p. 687)

Purkey (1970) advises educators to encourage students to try to learn and study effectively because success brings about positive changes in the way an individual sees himself. Morris (1973) supports this view and suggests, also, that one's attitude towards future work may well begin in school. If Morris' contention is true and if our society is to continue to progress and prosper, it is important to assess the study habits and attitudes which students have and are developing during their developmental years in our educational system.

Educators have been criticized for letting the junior high become too much a true "junior" to the senior high school by allowing "...contaminating characteristics such as subject-matter departmentalization, interscholastic athletics, sophisticated social activities, and future educational preparation to invade its programs" (Gatewood and Dilg, 1975, p. 3). Is the recent innovation of semestering at the junior high level one of these invading, contaminating characteristics or are there direct benefits to students in cognitive and affective learning?

Much of the literature on semestering reveals results, based on secondary school studies, regarding the relationship of school-year organization to academic achievement, the effect of time lapse on retention, and the subjective opinion of those involved in regard to approval or disapproval of a reorganization of the school year.

There is lack of empirical data to support the contention that the immediacy of goal, the more frequent evaluation, the longer class periods, and other commonly cited advantages of the semester plan are conducive to the formation of good work habits and increased motivation which results in better work habits. It is important, therefore, that studies relating to the affective domain define and empirically assess the affective value or benefit derived from the semester plan organization at the junior high level.

Purpose of the Study

Many educators believe that factors to be considered when estimating students' future academic success and their future comfort and satisfaction are the students' study habits and attitudes. The intent of this study was to investigate the study habits and attitudes of seventh and ninth grade students with respect to semester school-year organization and conventional school-year organization plans. The realization that non-intellectual factors are key variables in achievement suggested that research studies should be directed toward this endeavor. Recent changes adopted in educational planning and organization have attempted to be more aware of the increasing emphasis for present-day schools to take more notice of the psychological factors affecting the learning process. The junior high semester plan provided an increase in the concentration of instruction, an increase in the frequency of evaluation, and more

immediate feedback in the core courses. Therefore, this organizational change is being assessed in view of the effect it has on the development of study habits and attitudes.

Questions to be Investigated

The formation of good work habits and attitudes that are developed during the schooling process, hopefully, will lead to future productivity in our society. This study was designed to search for answers to some of the questions educators have concerning the effects of semestering on the development of study habits and attitudes at the junior high level. The specific questions to be investigated are as follows:

1. Is there a relationship between study habits and attitudes and academic achievement?
2. Is there a difference in the study habits and attitudes of seventh and/or ninth graders due to the organizational (semester/full-year) plan?
3. Are there differences between the study habits and attitudes of seventh grade students and ninth grade students?
4. Are there differences between the study habits and attitudes of seventh and/or ninth grade female students as compared to male students?
5. Within the semester plan is there a difference in study habits and attitudes of the students who receive instruction during the first semester in mathematics and science from those who receive instruction in geography and history?

6. Are there any interaction effects on study habits and attitudes of organizational plan by grade, or organizational plan by gender, or organizational plan by grade and gender?

Chapter 2

REVIEW OF THE LITERATURE

Survey of Literature on School Year Organization

Alternative patterns of organizing the school year have been receiving increased attention in professional and research literature. The identification of advantages and concerns attributed to the implementation of the semester plan has been the objective of questionnaire surveys to parents, students, and teachers. Studies have been designed to examine various aspects of dividing the school year and to examine attitudes of these people concerning the effect of the organizational plan on the learning process (Bergen et al., 1976; Bramwell and Mann, 1973; Brown, 1975; Dravland, 1970; Ellwood, 1970; Fehlberg, 1968; Horovatin, 1974; Saskatchewan Department of Education, 1969; Shaw, 1977; Swan and Sloat, 1970). From the published reports of these opinion surveys a compiled list of the most commonly identified benefits of the semester plan follows:

1. Evaluation is more frequent in the sense that testing is taking place in a shorter time span during a semester; therefore, less emphasis is put on final examinations.
2. Semestering more readily facilitates the introduction of a variety of instructional and learning approaches.

   These include:

more time for individual attention during a longer class period;

teacher assistance more readily available;

in-depth study of a subject area and more effective use of time;

better preparation and lesson planning by teachers due to fewer courses to teach; and

provision for group activity and multi-media procedures.

3. Poor attendance and drop-out rate are reduced.
4. Improvement in student satisfaction and well-being in the semester plan due to:

the opportunity to concentrate on fewer and/or weaker course areas;

better student-teacher relationships; and

the establishing of a learning environment that is more challenging, positive, and humane.

5. Semestering contributes to the formation of better study habits and attitudes due to:

increased motivation and interest; and

immediacy of the goal.

6. Semestering aids in administration by:

permitting greater flexibility in scheduling;

reorganizing without increasing cost; and

allowing for better use of facilities and greater availability of resources.

Although some researchers have concluded that the advantages of semester organization outweigh the disadvantages (Ellwood, 1970; Shaw, 1977), there are a number of concerns which are repeatedly identified by parents, students, and teachers in the literature surveyed. These are:

1. What are the effects of school year reorganization on academic achievement?
2. What are the effects of extended time lapses between subsequent courses on retention and loss of learning?
3. How does the reorganization of the school year affect the learning environment and hence the study habits and attitudes of the students involved?
4. How does the increased pace of instruction affect student workload and pressure?
5. What effect does the longer period have on the ability of the students to maintain interest and attention?
6. What administrative problems are created in the transfer of students, staff workload, registration and exit dates, and the marking of departmental examinations?

Some of these concerns can be alleviated by investigating conditions which are particular to the individual school setting and by drawing conclusions from various research reports. For example, the administrative problems are somewhat unique to each school system and since the parents, students, and teachers in general report favorable acceptance of the semester plan, it is worth the extra effort required by the administration. Reports of data on subjective opinion on homework (Dravland, 1970; Horovatin, 1974) and on the stress variable (Bramwell and Mann, 1973; Dravland, 1970; Horovatin, 1974) do not support the contention that the increased pace of instruction is more difficult for the student. Dravland (1970) and Horovatin (1974) also support the contention that students are able to make better use of their time in the longer periods and that productive teaching and learning activities can be maintained for the full time. Thus, some concerns appear unwarranted, notably four, five, and six.

However, the concerns about achievement and retention variables are considered to be so significant that independent studies have been designed by other researchers to empirically determine the effects of school year organization on them.

School Year Organization and Academic Achievement

One of the major concerns with the semester plan identified by teachers, parents, and students is that of academic achievement. Do

students who are in a semester organized school do as well as their counterparts in a conventional plan? Research findings suggest that students may in fact benefit academically from involvement in semester organization which allows for course compaction.

Girard (1962) measured the relative success of secondary students in grades nine to twelve at a southern Alberta high school, which operates on a trimester plan, with a comparable group of students in conventional school-year organization in four surrounding cities' high schools. The trimester plan in this case meant that the conventional school year was divided into three equal terms of approximately 65 days each and regular course work was completed in the shorter period by concentrating on fewer course areas. Departmental examination results in English, social studies, and mathematics for the years 1955, 1958, and 1961 were the dependent measures. No significant differences in academic achievement were found even when comparisons were made on the basis of high, average, and low achievement groups. This early study encouraged other researchers to design and conduct studies of a similar nature in their geographical areas and courses. It was encouraging to educators and administrators to learn that adverse effects were negligible as far as academic achievement was concerned.

Varner (1968) found that compacting school work into shorter periods of time made little difference to academic achievement.

Secondary school students taking courses in mathematics, American history, chemistry, and biology over a seven-week summer school period were compared with students taking these same courses in a conventional year. The results on standardized tests revealed that the summer school students were equal to, and often better than, the regular school students.

The relationship between student achievement in English, social studies, and mathematics on grade twelve Departmental examination finals and semester/conventional school-year plan was the basis of Fehlberg's (1968) study. Findings indicated that for English and mathematics student achievement did not differ significantly. However, for social studies there was significantly higher achievement by students in the semester plan. This difference was notable in the top and bottom twenty-five percent of the ability distribution as well as in general. Any concern that semestering inhibits the slower student academically would prove invalid if one considers the empirical evidence of this study and that of Girard (1962).

The research report on the semester system by Ellwood (1970) reveals in a longitudinal study in Red Deer, Alberta, which was initiated in 1949 and followed up to 1964, a substantial increase in student achievement with the introduction of the semester system.

Dupas (1972) measured student achievement at the grade ten level in mathematics and general science. These two groups of

mathematics 100 and general science 100 students had attended the same schools in grade nine and grade ten when the adoption of the semester system was initiated. The results of his study showed that academic achievement in both mathematics and general science was significantly better for the semestered groups.

Even though studies on the reorganization of the school year do not all report significant improvement in academic achievement, there appears to be no report of adverse effects of course compaction in a semester plan on academic achievement. Evidence such as this seems to support the reorganization of the school year to that of semestering, but these results are based on secondary student achievement.

School Year Organization and Learning Retention

In a number of surveys conducted prior to and after one year of piloting the semester systems, parents, teachers, and students admit concern about retention and loss of learning over extended periods of time (Bramwell and Mann, 1973; Horovatin, 1974; Shaw, 1977). This time lapse, which may be from six to twelve months, is created by the sequencing of courses over the various semesters in the different grade levels. A student may take grade seven mathematics in the fall semester of one year and not receive direct instruction in grade eight mathematics until the fall semester or even the spring semester of the next year.

Two research studies to assess the amount of loss in learning French that secondary students might experience were conducted by Smythe et al. (1973). In the first study, 220 students just completing grade nine French were given tests of listening comprehension and reading comprehension. After the summer holidays the same group was re-tested. Results showed a modest but significant improvement in listening skills and a loss of similar magnitude in reading skills.

The second, more complex study by the same researchers measured changes on the Canadian Achievement Test in French as a function of grade (9, 10, and 11) and, also, as a function of time lapse between testing sessions of three and eight months due to semester sequencing. Mean scores for gains in achievement over the grades increased by three percent while mean scores of achievement for groups divided according to the time lapse variable declined by four percent. The researchers concluded that their study demonstrated: "... only relatively small changes in second language performances were recorded over reasonably long periods during which students were not receiving instruction" (Smythe et al., 1973, p. 10).

A similar study to test retention of knowledge of numerical and algebraic concepts over various time lapses for 225 grade nine conventional and 220 semester students was conducted by Rachar et al. (1973). Pre-testing for the semester and conventional groups of

students on initial mathematical skills demonstrated no significant difference. After conducting the study, the evidence revealed that the degree of forgetting mathematical concepts which occurred over longer time lapses was relatively slight and that for both groups the degree of forgetting more recently acquired concepts was more pronounced than for the basic "overlearned" concepts (Rachar et al., 1973).

A study which demonstrated that learning in more compact time intervals is not easily forgotten is that of Varner (1968). In a retention study she used a group of secondary summer school students and a group of conventional term students. A battery of achievement tests was administered to both groups in May even though the summer school group had completed the course work ten months earlier. The results revealed that the summer school group did better than the comparable conventional group in mathematics and as well as the conventional group in the remaining tests. This study supports the contention that loss of learning is not affected by reasonable, extended time periods which are associated with semester planning.

A similar conclusion was also reached by Evans (1973): student ability to carry on with a subsequent course after a lapse period on a trimester plan was not significantly affected by the length of this lapse.

The emphasis of these studies was retention and loss of learning over time. Effects on these variables are a necessary consideration since much criticism of semestering has been directed toward the longer time interval between subsequent courses and the compaction of material into shorter learning intervals. From a review of these findings, it appears that much of the criticism of semestering effects on retention and recall lacks a firm empirical base. If achievement is not adversely affected and/or may even be improved in many cases and if the loss of learning over extended time lapses is minimal, then the semester plan may prove to be a beneficial innovation for the junior high school.

Empirical evidence is still lacking, however, on the major concern of how the reorganization of the school year, by altering the learning environment, affects the study habits and attitudes related to academic activity of the students involved. Recently, because of renewed interest in the rapid physical, psychological, social, and intellectual development of the early adolescent of the junior high stage, more emphasis by educators and psychologists is being devoted to studying the non-intellectual learning factors associated with the middle years (Morris and Renihan, 1978).

Social Characteristics of Adolescents and Academic Performance

Psychologists have repeatedly demonstrated that fluctuations of achievement motives appear to be sex related and that many of them

are due to sociocultural expectations and patterns of child rearing. Kagan and Moss (1962) in studies measuring psychological development at various stages between birth and maturity found that the striving for intellectual mastery appears at an earlier age for girls than for boys. Hauck (1970) in a literature review pertaining to sex differences at puberty was able to conclude that more explicit demands from parents and school are made for boys to settle down, study, and prepare for future vocational opportunity.

Differences in academic performance that have been found by some researchers may be explained by differences in perception of the sex-typed characteristics of school and academic work as well as by the developmental advantage of girls during early adolescence. Sontag, Baker, and Nelson (1958) in longitudinal studies were able to demonstrate that girls consistently earned higher IQ scores and better school grades during the early school years and up to adolescence whereas boys earned higher IQ scores during high school. These researchers suggest that the girls' motivational decrease can be attributed to feelings of anxiety and conflict over competitiveness in intellectual competence.

Tyler (1965) states that all studies of school achievement agree that girls consistently make better school records than boys, but that on IQ tests males are superior on tests of mathematical reasoning, spatial relationships, and science whereas females are superior in

verbal fluency, rote memory, perceptual speed, and dexterity. Maccoby (1966) has suggested that family and community pressures to suppress intellectuality converge on the girl at puberty. She states that once boys reach puberty the intellectual gap is closed and they are in an equitable position.

The focus of these changes occurs during the junior high years. A disproportionate number of subjects of either sex in groups being studied at this age could very well affect the comparative power of the results and needs to be considered as an independent variable by researchers who are interested in this stage of development. It will be interesting to know if any differences in study habits and attitudes (affective behavior) are apparent for boys and girls and if these differences are affected as a function of the school year organizational plan. Brown and Holtzman (1967) have consistently found mean scores on surveys of study habits and attitudes for men to be lower than those for women. They attribute these differences to the greater willingness of women to conform to academic patterns than for male students even at the college freshman level.

Age, too, may be a factor which influences the development of study habits and attitudes, for everyone has experienced considerable shifts in personal attitudes, views, and opinions over time even though basic values may remain stable. In complex longitudinal studies Bloom (1964) and his associates have shown that changes in characteristics such as habits and attitudes are linked very closely

to estimates based on an age curve of development. The formation of good study habits and attitudes may, therefore, be concurrent with age and performance.

From studies on general achievement, reading comprehension, and vocabulary development, it has been determined that by age nine (grade three) at least 50 percent of the general achievement pattern which will be attained at age eighteen (grade twelve) has been developed and that the remainder is achieved during adolescence (Howard and Strombis, 1970). The development in cognitive functioning and the concurrent study habits and attitudes which are cultivated during the early adolescent years of junior high students do indeed have a major influence on the individual's future effectiveness in society. This suggests the importance of the adolescent years in the development of learning patterns and the ability to make the most of his intellectual capacity.

Learning Environment and Academic Performance

Aside from home and peer group influences one other factor which affects general achievement is the school environment in which the adolescent lives, socializes, and learns (Coleman, 1961). The semester plan in junior high school is an innovation which attempts to respond to some of the problems associated with the period of early adolescent development. Because it is an acute time of change in physiological, psychological, social, and intellectual development,

the needs of the individual vary greatly. At this stage the learning environment may be critical to the maximum development of a student's learning potential.

Bloom (1964) concluded from longitudinal studies on stability and change that the greatest changes may take place in an individual when he enters a new level of school environment if it is different from the previous one and if it is a powerful and consistent learning environment; and he adds that all the individuals in it will change in uniform ways. These findings favor the introduction of the semester plan in junior high schools. It is definitely different from any previous school organization the students have experienced. It offers an increase in the concentration of instruction and evaluation, longer class periods, and fewer courses in any one term in the core courses. In this sense the semester organization could be considered a more powerful and consistent learning environment than the conventional school year organization. If students find satisfaction with their educational environment, this should lead to a more positive attitude toward learning and hence, to an improvement of study habits and attitudes for the majority of students who experience the semester plan.

Study Habits and Attitudes and Academic Achievement

In the opinion of many educators the student who has good study habits and attitudes will do better academically than the student

who has poor study habits and attitudes. In fact, the empirical research of Brown and Holtzman (1967) in the construction of an instrument to measure study habits and attitudes has repeatedly obtained significant correlations of .25 to .45 between students' academic achievement and their study habits and attitudes and much lower correlations of .05 to .27 between academic achievement and measures of scholastic ability.

Martens (1963) from his study of the relationship of intelligence, attitudes, and study habits to academic achievement at the ninth grade level concluded that there was a direct and positive correlation between study habits and attitudes and academic achievement.

According to Kahn (1974), study habits, like other habits, can be formed by constant practise so that the person who practises good study techniques will be rewarded, and he can predict for himself accomplishment and a degree of happiness. It appears that good study habits are conducive to learning and to the development of other efficient habits.

Morris (1973) contends that the connection between an individual's ambition and the willingness and ability to use inherent intelligence is such that having more of one results in having more of the other. In other words an individual can be helped to learn ways of utilizing his intellectual ability in more effective ways both for his own welfare and for more productive contributions to

society. One of the important tasks of educators, then, is to guide students in the formation of good study habits and attitudes.

The early adolescent years are marked by the emergence of a more abstract and sophisticated mode of intellectual functioning (Piaget, 1970). Surely this is a key time for the development of new and/or improved study habits and attitudes. If academic achievement is not adversely affected by the compression of course material into semester terms and may even be improved, and since there is a direct and positive relationship between academic achievement and study habits and attitudes, students who attend semester plan schools should develop superior study habits and attitudes in comparison to their counterparts in a conventional school year plan.

From a review of the literature it appears that the semester plan like any other plan is not perfect, but it may be a promising innovation which allows for implementation of alternatives that are being suggested as sound principles in education. The hypotheses that are investigated by this study with regard to semestering at the junior high level and its effects on study habits and attitudes will contribute additional information and empirical evidence in an area that has not been, to this time, well documented.

Hypotheses

In searching for some response to the questions posed in Chapter 1 and through a review of the current and relevant literature

the following hypotheses were generated:

H_1: There is a positive correlation between study habits and attitudes and academic achievement.

H_2: The study habits and attitudes of seventh and ninth grade students in a semester plan will be more positive than those of their counterparts in a conventional (full-year) school plan.

H_3: The study habits and attitudes of ninth grade students will be more positive than those of seventh grade students.

H_4: The study habits and attitudes of female students in grade seven and in grade nine will be more positive than those of the male students.

H_5: The study habits and attitudes of students who receive instruction during the first semester of the year in mathematics and science will not differ from those who receive instruction in geography and history.

Chapter 3

DESIGN OF THE STUDY

Setting

The study was carried out in two junior high schools of the Brandon School Division #40 in the province of Manitoba at the end of the first semester term, January 1978. One of these schools operates on a semester plan of two equal five-month periods and has 245 students. The second operates on a conventional full-year plan and has 369 students.

Each school has grade seven, eight, and nine classes. The school on semester organization has three classes of grade seven and three classes of grade nine. The school on conventional organization has four classes of grade seven and four classes of grade nine. Both schools practise departmentalization in subject instruction to some degree so that a number of students at each grade level in each school receive instruction in the core subjects from the same teachers.

The two schools chosen for this study are located in a similar geographical area. Both are located adjacent to the industrial park in the eastern sector of the city of Brandon, and they share a common school-dividing boundary line.

The demographic characteristics (age, gender, years of experience, and level of training) of the teachers in each school were considered not to be significantly different to jeopardize the study.

Sample Description

The sample of junior high students selected for the study were all grade seven students who were newly enrolled in their respective schools as of September 1977 and all grade nine students from the same two schools who had attended their respective school for at least three years (grade 7, 8, and 9). This should make the sample more representative of the junior high population by allowing for a variety of academic ability, creative ability, interest areas, and backgrounds. Two contaminating variables were controlled by elimination of students who transferred in during the three year period prior to grade nine (9 students in semester group; 10 students in conventional group), and the elimination of repeaters in the grade seven sample (3 students in semester group; 4 students in conventional group). Thus, for the grade sevens, study habits and attitudes developed in the mathematics and science semester group could be compared to those of the geography and history semester group. This exception insured that no grade seven student had more than five months exposure to their respective school plan.

Procedure

Permission to do the study was obtained from the Brandon School Division Board (Appendix C), Superintendent, Assistant Superintendent, and the two principals of the schools involved. After discussion with the principals and staffs with respect to teachers' and students' class-time required for the study, the nature of

information needed from the cumulative files, and the tests that would be administered in conducting the study, a testing schedule was arranged. All arrangements were contingent upon staff co-operation at each school.

Information pertaining to age, gender, grade, occupation of head-of-household wage earner, and record of attendance for the previous three year period of grade nine students and repeaters in grade seven were obtained from individual student records maintained by their respective schools.

Tests were administered to the classes of grade seven and nine students in the following order:

1. Survey of Study Habits and Attitudes (SSHA), 40 minutes,
2. Mathematics subtest of the Canadian Tests of Basic Skills (CTBS), 60 minutes,
3. Vocabulary subtest of the CTBS, 17 minutes, and
4. The Semantic Differential (SD) (Appendix D), 20 minutes.

The testing was conducted by one examiner during regular class time in three individual class sittings over a three-week period beginning on January 18, 1978 and ending on February 3, 1978. This period embraced the mid-term evaluation time for students on the conventional plan and the end of the first semester evaluation for the students on the semester plan. Test responses were hand-scored using scoring keys and recorded numerically for key-punching and computer analysis.

Independent Variables

For analysis, the students were grouped according to three independent variables. Descriptions of these variables follow.

Semester Plan Versus the Conventional Plan. The semester plan was first introduced into two of the six junior high schools in the Brandon Division during the 1974-75 school year. Since that time these two schools have continued to operate on the semester plan and one other junior high school has adopted a similar organizational plan. One of the two original schools on semester plan was chosen for this study. The other three junior high schools in the Division, including the second school chosen for this study, are operating on the conventional school-year plan. However, it is necessary to clarify the concept "semester" as it applies to the junior high programming in the school selected for this study.

In the semester plan the regular ten-month school year is divided equally into two five-month terms of approximately 95 teaching days. The semester change-over takes place on January 31. The core subjects of mathematics, science, history, and geography are taught to different classes each semester, whereas language arts, health, and physical education are maintained on the conventional ten-month plan. The remaining courses of study which make up a student's six-day schedule are two options which are chosen from the following areas: home economics, industrial arts, French, art,

music, and reinforcement in mathematics or English. These options are arranged on a semester or ten-month plan according to time-tabling feasibility and/or administrative convenience.

A semestered course in mathematics, science, history, or geography is essentially the same in content as set out by the Departmental curriculum guides and has approximately the same amount of instructional time as has a conventional plan course. The time, however, is compressed into a five-month period by lengthening the class periods and/or by scheduling the course more frequently on the six-day cycle. For example, the average length of class period in the semester plan is fifty-five minutes as compared to the thirty-five minute classes in the conventional ten-month school year plan. In the mathematics and science semester the students have 16 classes per cycle of core subject instruction which is a total of 880 minutes. In the geography and history semester the students have 12 classes per cycle of core subject instruction which is a total of 660 minutes. The students in the conventional system take the four core subjects over the entire year and have 22 classes per cycle of core subject instruction which is a total of 1540 minutes (Table 1). It is apparent that the student on semester who receives 1540 minutes of core subject instruction extended over two terms works with fewer main courses at a time, which involve the major assignments, homework, and testing requirements.

Table 1

Time Schedule of Core Course Instruction per Six-Day Cycle

Organizational Plan	Time Line			Mean Time Per Year
	Sept. 6/77	Jan. 31/78	June 27/78	
Semester	Mathematics (8x55)[a] Science (8x55)	Geography (6x55) History (6x55)		1540 minutes
Conventional	Mathematics (7x35) + (7x35) Science (7x35) + (7x35) Social Studies[b] (8x35) + (8x35)			1540 minutes

Note. Both schools operate on six-day cycle (Appendices A and B).

[a]Eight classes of 55 minutes each in instructional time per six-day cycle.

[b]In the Conventional plan Social Studies denotes geography and history classes.

In the semester school plan the students continue the second semester with the only major changes being in the core courses of study. If they have taken mathematics and science in the fall semester, they will take history and geography in the spring semester. This order may be reversed for some classes. However, at the end of the school year, the students in any one grade level have completed the equivalent of one grade level in all courses just as their counterparts in the conventional full-year plan. In the junior high semester plan there is no allowance for taking subsequent courses at the next grade level or repeating a failed course of study immediately. In other words, students may have periods of twelve months (February to February), seven months (February to September), or two months (July and August) elapse between subsequent grade levels of a course.

In a conventional full-year school plan the students complete the same course requirements for a grade level. The only major difference between the schools considered in this study as far as scheduling and instructional time is that of organizational plan. One operates on a conventional ten-month plan in which the student is involved with all courses of study extended over the year, whereas the other school operates on two equal five-month semester terms.

Grade Seven and Grade Nine. Both schools selected for this study are self-contained junior high schools with grades seven, eight, and nine classes. The total grade seven and grade nine student populations from each school were employed in this study. Grade seven students at each school are new to the junior high program and, also, at the semester school are new to the concept of semestering. If the study habits and attitudes of students are affected by a particular plan of school organization, the difference may become evident during this grade level. The grade nine students from each school have had at least three years of schooling in their particular organizational situation. Therefore, the differences in study habits and attitudes should be maintained and could be even greater after three years of exposure to a particular organizational plan. The only exceptions made to control for confounding variables within the grade populations were to eliminate grade nine students who had transferred in during the three year period and to eliminate repeaters in grade seven because of familiarity with the organizational plan prior to this year.

Gender. One of the questions considered by this study is that of the study habits and attitudes of female students as compared to those of their male counterparts. The number of male and female students in the groups being studied was comparable (Chapter 4, Table 7). Since the size of groups was substantially large (number

of subjects exceeded 27 in each case), any resulting differences due to gender on the dependent variable would be apparent. Scores for the students involved were grouped according to gender as well as organizational plan, and grade.

Control Variable. The lifestyle of the students is very difficult to assess when using different groups and different schools. Among some educators it is often thought that students' background because of differences in socioeconomic level might influence their study habits and attitudes. A research report on homework by the National Education Association (1975) does not support this premise and claims that students from all socioeconomic levels are becoming increasingly aware of the value of education and thus, socioeconomic status (SES) should be ignored.

However, other educators feel that lifestyle is largely determined by the socioeconomic status of the home (Sorochan and Bender, 1975) and to avoid the chance of distortion due to possible socioeconomic differences, SES was controlled.

The occupations of the head wage earner of the house-hold were listed under one of the ten major SES categories devised by Pineo and Porter (1967). In constructing this technique for ranking of occupation prestige in Canada, these researchers took into account the social background characteristics relating to home conditions, parental stock, work experience, mobility, attitudes to education,

and interethnic relations. A tabular count of the total number of households in each category for the subjects involved in the research from these two school areas was made. By drawing a comparison of percentage of head-of-house-hold wage earners in each occupational class, it was apparent that the two school areas used in this study were equivalent on the socioeconomic variable (Table 2).

Covariates. Two covariates were used in this study. They were academic achievement and age. From Brown and Holtzman's (1967) discussion of correlation between study habits and attitudes and grade point average, it would appear that academic achievement level might influence development of study habits and attitudes. Also, from Bloom's (1964) discussion on changes in characteristics such as habits and attitudes being linked very closely to estimates based on an age curve of development, the variable of age could have an influence on the measurement of study habits and attitudes.

Many studies such as those of Harrington and Roark (1969), Higgins (1967), and Martens (1963) support the contention that study habits and attitudes are directly and positively related to achievement more so than to scholastic ability. In this study it is necessary to determine if the above relationship exists within the semester and conventional groups being investigated. Since this study is not a comparative study of academic achievement between the groups, it required the choice of a reliable method of measuring

Table 2

Percentage of Head-of-Household Wage Earners in Each Occupational Class

Income Group	Occupational Classes	Organizational Plan	
		Semestered	Conventional
High	Professional	5.43%	4.29%
	Semi-professional	3.10	6.13
	Proprieters, Managers and Officials, Large	2.33	0.61
	Total	10.86	11.03
Middle	Proprieters, Managers and Officials, Small	24.03	20.25
	Clerical and Sales	19.38	12.88
	Skilled	18.60	17.18
	Semi-skilled	13.95	22.09
	Total	75.96	72.40
Low	Unskilled	7.75	9.20
	Farmer	0.76	0.61
	Not in Labour Force	4.65	6.75
	Total	13.16	16.56
Number of People		129	163

present academic level of subjects within the schools. A test which the Brandon Division uses and recommends to check individual development of academic learning is the Canadian Tests of Basic Skills (King, 1974). By using scores from the academic subtests of vocabulary and mathematics and computing a composite achievement score for each student in the study, a reliable and valid measure of the academic level of each individual to employ as a covariate should be obtained.

In this study "intact" groups were used. To control for discrepancies, which may be due to age differences between the semester and conventional groups at the grade seven or grade nine level, this variable was considered as a covariate so that if differences are found the means of the study habits and attitudes of the groups being investigated can be adjusted to permit an unbiased comparison. For each student in the study age was recorded in months as of January 31, 1978.

Dependent Variables

Two dependent measures were used in this study. They are the Survey of Study Habits and Attitudes (SSHA) (Brown and Holtzman, 1967) and a self-designed Semantic Differential (SD) of four attitudinal concepts related to scholastic activity. These are described below.

Survey of Study Habits and Attitudes. The validity of a test is the degree to which the test measures what it claims to measure. The SSHA was designed to measure study methods, motivation for studying, and attitudes toward scholastic activity in the classroom. The purposes of the SSHA are: to help identify those students whose study habits and attitudes are different from those who earn high grades, to aid in understanding pupils who experience academic difficulty, and to provide a base for counseling such students to improve their study habits and attitudes in order to realize their highest potential (Brown and Holtzman, 1967). The research reviewed consistently supported the validity of the SSHA to furnish this kind of information.

Morris (1961) studied concurrent validity of the SSHA-Form H designed for grades seven to twelve. He reported that 69.8 percent of seventh graders who were rated as A-B students by their teachers made 10 or fewer critical responses as revealed on the Counseling Key of the SSHA, whereas 77.0 percent of the D-E students made more than 10 critical responses. Morris concluded that this instrument "...does identify students whose study habits and attitudes are different from those of students who earn high grades," and that through the use of the Counseling Key, the educator "...can identify critical items of academic behavior and beliefs that are different from those characteristics of high scholarship students" (Morris in Brown and Holtzman, 1967, p. 16).

Brown and Holtzman (1967) state that the SSHA-Form H has been validated in a large number of junior and senior high schools. Some studies used the criterion of grade point average based on the core courses of science, social studies, language arts, and mathematics. In one such study by Cordes (1964) a sample of 3731 students in grades 7 through 12 were administered the SSHA. The correlations between the SSHA score and grade point average were repeatedly significant and ranged from .31 to .85 with a mean of .55 (Brown and Holtzman, 1967).

In studies which employ measures of scholastic aptitude, academic grades, and SSHA scores, it is significant to note that the correlations between grades and SSHA scores are relatively higher than those between scholastic aptitude and SSHA. For example, Shay (1972) reports evidence for validity as being present in terms of low correlation coefficients (.27) between SSHA-Form H scores and aptitude tests and higher correlations (.49) between SSHA and grades. This suggests that the instrument is not just a measure of academic ability, but that it is related to grades or academic achievement indicating that the SSHA provides a measure of personal traits that are relevant to academic progress.

Higgins (1967) reports high subscale intercorrelations. On a normative sample of 11,218 students in grades 7 through 12, correlations between the two study habit scales (Delay Avoidance and Work

Methods) reached .70 and between the two attitude scales (Teacher Approval and Education Acceptance) reached .68. This study, too, supports the assumption that researchers make about the high validity of the SSHA. Accumulated data during validation studies are encouraging, but all reviewers stress the fact that the instrument's validity depends on the frankness and accuracy of the responses for it is a self-report survey.

The reliability of the SSHA has been calculated using the test-retest method and the split-test method. Harrington and Roark (1969) report reliabilities calculated after 4- and 14-week intervals varying from .83 to .94. Shay (1972), using the split-test method, states that the lowest subscale reliability coefficient was .87 and that the lowest test-retest reliabilities of the 4- and 14-week intervals were .88 and .83 respectively. Although SSHA-Form C and Form H represent a high degree of similarity Brown and Holtzman (1967) conducted an additional test-retest reliability study for Form H. The SSHA-Form H was administered to 237 ninth-graders twice with a four-week interval. The Delay Avoidance (SDA), Work Methods (SWM), Teacher Approval (STA), and Education Acceptance (SEA) subscale reliability coefficients were .95, .93, .93, and .94 respectively, and .95 for the total score which is a cumulative score of all subscales.

Reviews by Deese (1968) and by Wrenn and Lewis (1968) of the original form of the SSHA and by Higgins (1967), Harrington and

Roark (1969), and Shay (1972) of the revised forms of the SSHA support the claim that the SSHA has demonstrated a suitable level of reliability for use as a research tool. Also, Brown and Holtzman (1967) found that the subscale scores over time are sufficiently stable to warrant their use "...in predicting future behavior or in assessing the degree of change in study habits and attitudes after counseling" (p.24). Therefore, this instrument should reliably measure a difference, if one exists, in the study habits and attitudes between the two groups of students involved in this study who are instructed in differing school-year organizational plans. Also, it should provide a reliable measure of the differences that might be found in the study habits and attitudes between the grade seven and grade nine students and between males and females.

Semantic Differential (SD). The second dependent measure selected for evaluating attitudes related to scholastic activity in the classroom was a self-developed semantic differential. This technique as designed by Osgood, Suci, and Tannenbaum (1957) is a method of measuring the psychological meaning of concepts through people's reaction to stimulus concepts in terms of ratings on bipolar scales of contrasting adjectives.

According to Heise (1970) and Kerlinger (1973) SD methodology is an acceptable form for measuring affective responses for the following reasons:

1. It measures directionality as well as intensity of a person's feelings,
2. It is simple and economical and can be adapted for use with children,
3. The ratings tend to be correlated and three basic dimensions of evaluation, potency, and activity account for most of the covariations in rating, and
4. It has been used, verified, and replicated in a variety of studies. The results of these studies support the validity of the SD as an attitude measurement technique.

In this study the SD consisted of a number of bipolar adjective pairs, separated by a five-point rating (recommended by Heise (1970) for children). Twelve such pairs were placed with each of the four concepts chosen following a pilot study. The four attitudinal concepts being measured were identified by the stimuli:

A For me studying for tests and examinations is

B For me student and teacher relationships are

C For me class assignments are

D For me doing my school work carefully is

(Appendix D).

For each concept the basic components of evaluation, potency, and activity were measured by four sets of adjective scales. The students were asked to rate each set of adjectives in relation to

the particular concept. High negative correlations with the SSHA would be expected as the scales of the SD were scored with the lower values indicating the more positive attitudes to scholastic activity in the classroom, whereas a high score on the SSHA indicates better study habits and attitudes. For example, a scale on the SD would be scored as follows:

good 1 : 2 : 3 : 4 : 5 bad.

The adjective scales selected for this particular SD instrument were chosen from Osgood's fifty scales that are listed with their factor identifications and the strength of the identification (Osgood and Suci, 1969). The scales with the highest positive loadings for a basic dimension were selected if they were thought to be relevant to a concept. They were pretested in a pilot study.

The pilot study using 28 grade eight students, with similar educational experiences as the grade seven and nine students selected for the study, was conducted. The instrument developed prior to the pilot study had six main concepts related to scholastic attitudes and components of evaluation, potency, and activity; i.e., 15 sets per concept. Following the analysis of the results of the pilot study the four basic concepts identified above as A, B, C, and D and 12 sets of adjective scales for each concept were retained in the final instrument. The selection of scales for each concept from the pilot study was based on the scale intercor-

relations within each concept. Only the scales with product-moment intercorrelations over .50 and significance levels of less than .01 (and usually $p < .001$) within a concept were retained.

The SD for this study was developed to measure attitudes to scholastic activity in the classroom at the junior high level. The validity of the instrument can be inferred from the correlations obtained with the SSHA and its subscales. These results are reported in Table 3. A significance level of $p < .001$ for 328 students was required before the scale qualified for further analysis.

One method of determining reliability or accuracy and precision of a measuring instrument is that based on the internal consistency of a test (Kerlinger, 1973). If the test items are internally consistent the test is likely to be reliable. A statistical coefficient known as Cronbach's alpha was employed to determine the homogeneity of test items of the SD developed for this study (Cronbach, 1967). The results are summarized in Table 4.

The alpha levels on evaluative scales for all concepts ranged from .78 to .83. On the potency scales alpha levels ranged between .12 and .80. These showed the greatest range of values and the low alphas reflect lower reliability. The alpha levels on the activity scales ranged from .62 to .72. The results of this test of internal consistency of test items demonstrated that the evaluative and activity components for each concept were relatively homogeneous

Table 3

Correlations between Full Scale and Subscales of SSHA-Form H and Semantic Differential Concepts on Three Basic Components (N = 328)

Semantic Differential		SSHA Subscales						Full Scale SSHA
Concepts	Components	SDA	SWM	SH	STA	SEA	SA	
A	Evaluative	-.34	-.29	-.33	-.35	-.37	-.38	-.38
	Potency[a]	.00	.06	.03	.09	.05	.07	.06
	Activity	-.37	-.32	-.37	-.29	-.35	-.34	-.38
B	Evaluative	-.41	-.39	-.43	-.53	-.51	-.55	-.52
	Potency	-.41	-.34	-.40	-.47	-.44	-.48	-.47
	Activity	-.30	-.25	-.30	-.40	-.40	-.42	-.38
C	Evaluative	-.39	-.35	-.39	-.37	-.37	-.40	-.42
	Potency[a]	.19	.12	.17	.19	.17	.19	.19
	Activity	-.33	-.24	-.31	-.28	-.33	-.32	-.34
D	Evaluative	-.45	-.43	-.47	-.40	-.44	-.45	-.49
	Potency	-.31	-.30	-.32	-.23	-.24	-.25	-.30
	Activity	-.40	-.38	-.41	-.38	-.40	-.41	-.45

Note. Correlation of -.17 is required for significance at $p < .001$ level.

[a]The potency factor of Concepts A and C did not meet criterion level.

Table 4

Internal Consistency Levels
(Cronbach Alpha) and Means of Osgood's
Factor Loadings for Selected Scales

Semantic Differential		Cronbach Alpha[a]	Osgood's Mean Factor Loading[b]
Concepts	Components		
A			
For Me Studying	Evaluative	.83	.83
For Tests and	Potency	.12	.53
Examinations Is	Activity	.66	.57
B			
For Me Student	Evaluative	.86	.81
and Teacher Re-	Potency	.80	.48
lationships Are	Activity	.72	.52
C			
For Me Class	Evaluative	.78	.68
Assignments	Potency	.65	.56
Are	Activity	.62	.48
D			
For Me Doing	Evaluative	.79	.79
My School Work	Potency	.53	.57
Carefully Is	Activity	.65	.57

[a] Cronbach Alpha calculated for N = 328.

[b] Source: Osgood, C. E. & Suci, G. J. Factor analysis of meaning. In J. G. Snider & C. E. Osgood (Eds.), Semantic differential technique: A source book. Chicago: Aldine Publishing, 1969, 48.

and, therefore, should be dependable measures. The reliabilities of the potency component were questionable. From the results in Table 4, it is evident that the alpha levels on the evaluative and activity components of each concept are comparable to the original factor loadings reported by Osgood and Suci (1969) for the adjective scales selected. Thus, these measures of attitudinal concepts related to academic activity should provide a reliable source of data.

Description of Analysis

Since education as a process involves a number of variables interacting simultaneously, the analysis of the data should not only point out various differences between effects of the independent variables, but, also should reveal the interaction effects of significant factors (Van Dalen, 1973). Factorial designs using analysis of variance on results allow for this evidence of interactions. However, because of difficulties which arise due to matching procedures when using intact groups, the development of a procedure termed analysis of covariance enables the researcher to control some variations between the groups.

Popham (1967) explains that the analysis of covariance involves a combination of the analysis of variance concept and the regression concept. The analysis of covariance determines the magnitude of the relationship between the covariate variables and

the dependent variables. Then, statistically the procedure re-adjusts by means of a regression prediction method each dependent score so that the adjusted score compensates for any covariate variable differences which exist between the groups being compared. The adjusted scores are subjected to an analysis of variance to test mean differences by demonstrating the amount of variance resulting from differences between the groups. The obtained F values are then compared with tabulated critical values of F at a selected level of significance ($p < .05$) so that comparable research studies may be conducted.

Statistical Model for Testing the Main Hypotheses

The design presented in this chapter suggests the need of a statistical model to help answer the questions cited in Chapter 1. The first question pertains to a relationship between the covariate achievement and study habits and attitudes. The next four questions deal with the effects of organizational plan, grade, gender, and core course instruction on study habits and attitudes as measured by the SSHA and two attitudinal components of each of the four SD concepts. These independent variables will be treated as factors in the statistical model. Achievement and age are statistically controlled as covariates. The linear model (Kirk, 1969, p. 473) for the analysis of covariance with two covariates is:

$$Y_{ij}(adj) = Y_{ij} - \beta'_{Yyx}(X_{ij} - \overline{X}...) - \beta'_{Yyz}(Z^{ij} - \overline{Z}...)$$
$$= \mu + \beta_j + \varepsilon_{i(j)}$$

The components of the model are:

$Y_{ij}(adj)$: dependent measures adjusted for covariates,

Y_{ij} : unadjusted dependent measures,

β'_{Wyx} : common population linear regression coefficient for treatment levels of covariate achievement (X),

β'_{Wyz} : common population linear regression coefficient for treatment levels of covariate age (Z),

X_{ij} : measure for subject i in treatment population j for covariate achievement,

Z_{ij} : measure for subject i in treatment population j for covariate age,

$\overline{X}...$: overall mean of covariate achievement,

$\overline{Z}...$: overall mean of covariate age,

μ : population mean of the dependent variable,

β_j : combined factor effect for level j, which is constant for all subjects in treatment population, and

$\varepsilon_{i(j)}$: experimental error.

This will adjust the dependent variable by removing the extraneous variation associated with the covariates X and Z.

The order of the dependent measures for subject i in treatment population j was:

Y_{ij}^{1} : score on the SSHA,

Y_{ij}^{2} : evaluative scale score on Concept A of SD,

Y_{ij}^{3} : activity scale score on Concept A of SD,

Y_{ij}^{4} : evaluative scale score on Concept B of SD,

Y_{ij}^{5} : activity scale score on Concept B of SD,

Y_{ij}^{6} : evaluative scale score on Concept C of SD,

Y_{ij}^{7} : activity scale score on Concept C of SD,

Y_{ij}^{8} : evaluative scale score on Concept D of SD,

Y_{ij}^{9} : activity scale score on Concept D of SD.

Null Hypotheses. To answer the questions, a series of null hypotheses were stated based on the preceding structural model:

Question 1: Is there a correlation between academic achievement and study habits and attitudes as measured by the dependent variables?

Ho_1: $\rho = 0$

Question 2: Is there an effect due to organizational plan?

Ho_2: $\beta_j = 0$ (j = 1, semester; j = 2, conventional)

Question 3: Is there an effect due to grade?

Ho_3: $\beta_j = 0$ (j = 1, grade seven; j = 2, grade nine)

Question 4: Is there an effect due to gender?

Ho_4: $\beta_j = 0$ (j = 1, female; j = 2, male)

Question 5: Is there an effect within the semester plan due to order of core course instruction?

Ho_5: $\beta_j = 0$ (j = 1, mathematics and science; j = 2, geography and history)

Since more than one factor is being considered simultaneously, interactions of independent variables on the dependent measures are

probable. Therefore, tests for simple main effects will be employed to analyze and explain any interactions which may affect study habits and attitudes as well as tests for single factors. All hypotheses were tested against alternate hypotheses which indicate that a difference does exist due to that effect. Tests were considered at the .05 level of significance.

Chapter 4

ANALYSIS OF RESULTS

Variable Intercorrelations

In order to assess the internal consistency of the measures and hence, to some degree, the reliabilities of the dependent measures for the group of 328 students involved in the study, the product-moment correlation was employed between:

(a) the subscales and the total scale score of the SSHA

(b) the subscales across concepts within the SD.

The subscale correlations of the SSHA (termed Delay Avoidance, Work Methods, Teacher Approval, and Education Acceptance) with the total scale of Study Orientation were: .86, .87, .87, and .89 respectively. The combination of scores for Delay Avoidance and Work Methods into the scale termed Study Habits and the combination of scores for Teacher Approval and Education Acceptance into the scale termed Study Attitudes yielded intercorrelations of .92 and .93 respectively with the total score of the SSHA (Table 5). Because of the high intercorrelations, the total score of the SSHA was chosen as the basic dependent measure of study habits and attitudes of this instrument and the subscale scores were dropped from further analysis.

Table 5

Full Scale and Subscale Intercorrelations of SSHA-Form H (N = 328)

Scale	SDA	SWM	SH	STA	SEA	SA	SSHA
Delay Avoidance (SDA)	1.00						
Work Methods (SWM)	.76	1.00					
Study Habits (SH)	.94	.94	1.00				
Teacher Approval (STA)	.59	.64	.66	1.00			
Educational Acceptance (SEA)	.67	.70	.73	.77	1.00		
Study Attitudes (SA)	.67	.71	.73	.95	.94	1.00	
Study Orientation (SSHA)	.86	.87	.92	.87	.89	.93	1.00
Mean	20.3	21.2	41.4	22.2	23.4	45.6	86.9
SD	8.8	8.6	16.3	10.1	9.2	18.2	32.3

Note. Correlation of .17 is required for significance at $p < .001$ level.

The four attitudinal concepts of the SD were tested for intercorrelations. The results on the basic components of evaluative, potency, and activity for each concept are reported in Table 6. Since the intercorrelations were somewhat lower than those obtained for the SSHA, the significance of the correlations for the three basic dimensions across concepts were tested for significance using the distribution of t-test (Ferguson, 1971, p. 169).

The correlation coefficients within the evaluative and activity components and between the evaluative and activity components for all concepts over 328 cases ranged from .30 to .71. All were significant at the .001 level. The correlations within the potency component and between the potency component and the other two components across all concepts were not consistently significant even at the .01 level. On the basis that the potency dimension did not reach an equivalent measure of significance, nor was it consistently correlated, it was decided to drop the scores obtained on this scale for each concept from further analysis. It should be noted (Chapter 3, Table 3), that in the description of the construction of the SD, the intercorrelations between the SD scores and the SSHA scores indicated a possible weakness of the potency component. The intercorrelations between the potency component for concepts A and C and the SSHA failed to reach the required significance level of .001. Therefore, only the evaluative and activity dimensions of the

Table 6

Correlations of the Semantic Differential Concepts on Three Basic Components (N = 328)

Concepts	Components	EA	PA	AA	EB	PB	AB	EC	PC	AC	ED	PD	AD
A For Me Studying for Tests and Examinations Is	Evaluative (EA)	1.00											
	Potency (PA)	-.14	1.00										
	Activity (AA)	.67	-.17	1.00									
B For Me Student and Teacher Relationships Are	Evaluative (EB)	.43	.04	.30	1.00								
	Potency (PB)	.33	.14	.22	.69	1.00							
	Activity (AB)	.45	.03	.36	.71	.65	1.00						
C For Me Class Assignments Are	Evaluative (EC)	.44	-.05	.40	.33	.31	.33	1.00					
	Potency (PC)	-.10	.33	-.09	-.06	.03	.02	-.43	1.00				
	Activity (AC)	.52	.03	.50	.36	.33	.48	.64	-.14	1.00			
D For Me Doing My School Work Carefully Is	Evaluative (ED)	.46	.03	.34	.53	.40	.45	.48	-.10	.44	1.00		
	Potency (PD)	.16	.25	.19	.28	.24	.23	.16	.25	.24	.52	1.00	
	Activity (AD)	.46	-.07	.45	.41	.34	.49	.43	-.08	.56	.70	.46	1.00
Mean		12.8	10.9	12.5	10.0	11.5	11.3	11.6	11.0	11.5	9.6	10.4	10.9
SD		3.9	2.4	3.4	3.8	3.6	3.3	3.6	3.1	3.1	3.4	2.9	3.2

Note. Correlation of .17 is required for significance at $p < .001$ level.

SD for the 328 students in the study were considered in the analysis as the second dependent measure.

Covariate Correlations with the Dependent Variables

Since practical considerations prevented the assignment of subjects to groups at random, two covariates were identified: age and achievement. The product-moment of correlation was employed to determine the intercorrelations between achievement and all dependent measures (Table 7) and between age and all dependent measures (Table 8) for all subgroups. This analysis would provide the answer to the first hypothesis (H_1) which states that there is a positive correlation between study habits and attitudes and achievement, and it would help to determine the necessity of statistical control for differences in achievement level and age which may be inherent in the groups.

After the correlations between achievement and age and all dependent measures for the eight subgroups were obtained, a median score for the total group was determined. The *t*-ratio was used to make comparisons of the significance of median correlations (Ferguson, 1971, p. 169).

The only correlation between the covariates and the dependent variables for the total group of subjects that reached significance at the .05 level was that of study habits and attitudes on the SSHA with achievement. The coefficient was .33. Within the subgroups

Table 7

Correlations between Covariate Achievement and Dependent Variables

Dependent Variables	Semester				Conventional				Median
	Grade 7		Grade 9		Grade 7		Grade 9		
	1	2	3	4	5	6	7	8	
	Male	Female	Male	Female	Male	Female	Male	Female	
SSHA	.36	.44	.30	.08	.35	.27	.45	.30	.33
Concept A									
Evaluative (EA)	.17	-.30	-.00	-.23	.05	.13	.12	-.09	-.02
Activity (AA)	-.23	-.03	-.03	-.36	-.23	-.03	.13	-.20	-.17
Concept B									
Evaluative (EB)	-.16	-.24	-.23	-.13	-.10	-.00	-.20	-.17	-.17
Activity (AB)	-.05	-.31	-.14	-.09	-.01	.04	-.13	-.05	-.07
Concept C									
Evaluative (EC)	-.12	-.08	-.27	-.04	-.11	-.11	-.10	.25	-.11
Activity (AC)	.00	.07	-.13	.14	-.29	-.01	-.12	.15	-.06
Concept D									
Evaluative (ED)	-.12	-.31	-.16	-.06	-.28	-.31	.01	-.06	-.14
Activity (AD)	-.11	-.06	-.35	-.05	-.30	-.14	.01	.03	-.09
Group Size	31	36	28	39	48	51	45	50	42

Note. Correlation of .30 is required for significance at $p < .05$ level.

Table 8

Correlations between Covariate Age and the Dependent Variables (N = 328)

Dependent Variables	Semester				Conventional				Median
	Grade 7		Grade 9		Grade 7		Grade 9		
	1	2	3	4	5	6	7	8	
	Male	Female	Male	Female	Male	Female	Male	Female	
SSHA	.12	-.12	-.12	-.06	-.14	-.12	-.05	.06	-.09
Concept A									
Evaluative (EA)	-.24	.23	-.02	-.11	-.17	-.02	-.09	-.21	-.10
Activity (AA)	-.13	.07	-.07	-.02	.16	.02	-.04	-.14	-.03
Concept B									
Evaluative (EB)	-.29	-.22	-.11	-.03	-.13	.14	.23	-.08	-.10
Activity (AB)	-.40	-.06	.11	-.10	-.16	-.02	.05	-.02	-.04
Concept C									
Evaluative (EC)	.03	.23	.32	-.26	-.04	-.18	-.17	-.26	-.11
Activity (AC)	-.10	.20	-.07	-.09	-.02	-.21	-.01	-.18	-.08
Concept D									
Evaluative (ED)	-.04	.18	-.04	.07	-.02	.09	.02	-.25	.00
Activity (AD)	-.07	.18	.28	.02	.10	.12	-.17	-.22	.06
Group Size	31	36	28	39	48	51	45	50	42

Note. Correlation of .30 is required for significance at $p < .05$ level.

the covariate achievement was significantly correlated at the .05 level with study habits and attitude scores of the SSHA for six of the groups. These were:

	n	r
Group 1 - Semester, grade 7, male	31	.36
Group 2 - Semester, grade 7, female	36	.44
Group 3 - Semester, grade 9, male	28	.30
Group 5 - Conventional, grade 7, male	48	.35
Group 7 - Conventional, grade 9, male	45	.45
Group 8 - Conventional, grade 9, female	50	.30

From Table 7, null hypothesis Ho_1 was rejected at the predetermined significance level of .05 ($\underline{t} = 2.21$, $\underline{df} = 40$).

The correlation between the covariate age and study habits and attitudes on any of the dependent measures was not statistically significant (Table 8). However, it was interesting to note that on the SSHA measure age demonstrated a slightly negative correlation whereas the correlation with achievement had been positive. Also, on concept D of the SD the correlation coefficients were opposite for the covariates of age and achievement. On the basis of these correlation statistics--a significant relationship between achievement and study habits and attitudes and the difference in direction of the correlation of age (although not significant) with study habits and attitudes--it was decided to retain the two covariates in further analysis to control for any effects which may have been present due to differences on these variables in the groups being compared.

Testing the Analysis of Covariance Assumptions

To draw proper inferences from the analysis of covariance of the data, three important assumptions must be fulfilled. The first assumption for the fixed-effects model is that the errors are normally distributed for each treatment population. In this study the descriptive statistics of the eight subgroups across all dependent measures for skewness ranged from -0.055 to 0.676 (Mean 0.200) and for kurtosis figures ranged from -0.795 to 0.695 (Mean -0.021). Population normality can be inferred from these statistics, for it is evident that the departure of any treatment group is minimal. Ferguson (1971) and Kirk (1969) assure the researcher that unless an extreme departure from normality can be readily detected by visual inspection of the data, a moderate departure will have little effect on the conclusions drawn by using an F-test.

The second assumption which must be considered when using analysis of covariance is that of homogeneity of covariance or regression coefficients. In order to determine the homogeneity of covariance, the equivalence of the correlations between the covariates and the dependent variables reported in Tables 7 and 8 were checked across the eight subgroups. Using the tabled value of 2.021 at the .05 significance level and 40 degrees of freedom, the t formula (Ferguson, 1971) was used to solve for a value of r. This calculation produced a confidence interval which could be used to

assess the homogeneity of regression coefficients with median $\underline{r} \pm .302$. The subgroup correlations were within the confidence interval of the group medians on all the dependent measures. In this study the homogeneity of covariance was satisfied.

The third assumption is homogeneity of variance for the dependent variables. The $\underline{F}$ distribution is so robust with respect to violation of the assumption of homogeneity of error variance that Cochran's Test has adequate sensitivity for testing the assumption in situations where heterogeneity is suspected (Kirk, 1969). This assumption, therefore, was tested by performing the test statistic proposed by Cochran. The calculations were made using eight for the number of treatment conditions and 40 degrees of freedom (Median $\underline{n}$ was 42). The Cochran statistical values reported in Table 9 on all dependent measures were tested at the .05 level of significance. Three of these values were below the critical percentage point value of Cochran's Test for Homogeneity of Variance at the .01 level, and the other six values were below the critical percentage point at the .05 level. On the basis of these findings the assumption of homogeneity of variance was violated. According to Ferguson (1971) and Kirk (1969) moderate departures from homogeneity should not seriously affect the conclusions drawn from the data provided that the other assumptions are not violated and that sample size is relatively large ($\underline{n} > 27$ in this study).

Table 9

Descriptive Statistics of Eight Subgroups on Dependent Variables and Cochran's Statistic for Homogeneity of Variance

Dependent Variables	Semester				Conventional				Total Group	Cochran's Statistic C
	Grade 7		Grade 9		Grade 7		Grade 9			
	1	2	3	4	5	6	7	8		
	Male	Female	Male	Female	Male	Female	Male	Female		
SSHA										.1558[a]
Mean	80.0	93.7	72.9	86.5	89.2	99.5	74.4	90.8	86.9	
SD	26.500	35.053	33.591	30.699	31.127	32.751	29.855	30.890	32.255	
Concept A										
Evaluative Mean	13.1	12.6	14.1	12.8	11.9	11.4	13.6	13.6	12.8	.2088[b]
SD	3.540	3.157	3.970	2.833	4.603	4.916	3.461	3.480	3.923	
Activity Mean	12.6	12.1	12.4	12.9	11.1	11.7	13.9	13.3	12.5	.1773[a]
SD	3.095	2.832	3.478	2.697	3.787	3.882	3.299	2.775	3.372	
Concept B										
Evaluative Mean	10.5	9.7	13.2	10.8	9.8	9.0	10.0	8.9	10.0	.1651[a]
SD	3.854	2.753	3.584	3.111	4.158	3.992	3.808	3.463	3.790	
Activity Mean	10.8	11.3	13.0	12.4	10.9	10.8	11.4	10.7	11.3	.2181[b]
SD	2.818	2.586	3.139	2.520	4.102	4.259	3.278	2.575	3.338	
Concept C										
Evaluative Mean	12.0	11.3	12.1	10.9	11.1	11.3	12.8	11.8	11.6	.2158[b]
SD	3.327	2.937	4.007	2.635	3.854	4.621	3.242	3.092	3.557	
Activity Mean	11.4	10.7	11.5	11.6	10.8	11.5	12.6	12.1	11.5	.1984[a]
SD	2.927	2.638	2.835	2.185	3.775	3.613	3.307	2.297	3.068	
Concept D										
Evaluative Mean	10.0	9.5	11.0	9.5	9.5	8.8	10.5	8.7	9.6	.1983[a]
SD	3.071	2.962	3.399	2.674	4.197	3.833	3.770	2.327	3.408	
Activity Mean	11.2	10.8	11.6	11.0	10.0	10.2	12.0	11.0	10.9	.1868[a]
SD	2.617	2.789	3.021	2.719	3.809	3.387	3.793	2.482	3.193	
Group Size	31	36	28	39	48	51	45	50	328	Median 42

[a]Critical value of .2007 is required for significance at $p < .05$ level.

[b]Critical value of .2199 is required for significance at $p < .01$ level.

Although homogeneity of variance was violated, homogeneity of covariance and normality were satisfied. Therefore, the conclusions and inferences drawn upon the analysis of covariance results on the data from the present study can be accepted with some reliability.

Analysis of Covariance Results

Tables 10 to 14 report the statistics for the analysis of covariance on the dependent variables of SSHA scores and the four attitudinal concepts measured by the SD scores. Concept A refers to attitude measured by "For me studying for tests and examinations is"; Concept B refers to "For me student and teacher relationships are"; Concept C refers to "For me class assignments are"; and Concept D refers to "For me doing my school work carefully is". The independent variables are identified by the terms Semester (I) referring to semester versus conventional school year organizational plan, Grade (J) referring to grade seven and grade nine, and Gender (K) referring to female and male students. Age and achievement have been identified as covariates and were statistically controlled.

The analysis of covariance on the SSHA scores as reported in Table 10 revealed no statistically significant interaction effects of the independent variables on the study habits and attitudes as measured by this dependent variable. The school year organizational plan had no significant effect on the study habits and attitudes of

Table 10

Analysis of Covariance Results on SSHA-Form H (N = 328)

Source of Variance	df	MS	F	p <	Means Adjusted for Covariates
Semester (I) (Semester-Conventional)	1	502.908	0.565	.453	85.41 87.98
Grade (J) (Seven-Nine)	1	14023.840	15.760	.001[a]	102.67[b] 70.80
Gender (K) (Female-Male)	1	16445.852	18.482	.001[a]	93.52[b] 79.30
I x J	1	256.684	0.288	.592	
I x K	1	32.937	0.037	.848	
J x K	1	267.318	0.300	.584	
I x J x K	1	32.650	0.037	.848	
Error	318	889.815			
Total	327	1040.371			

[a]Significant at predetermined level (.05).

[b]Higher values on SSHA scores indicate more positive study habits and attitudes.

the students in this study. However, the effects of the other two independent variables of Grade and Gender were both significant at the .001 level.

A closer look at the adjusted means of the SSHA reported in Table 10 showed that the study habits and attitudes of the grade seven students were significantly superior to those of the grade nine students in the study. Also, the study habits and attitudes of the female students were superior to those of their male counterparts as measured by the SSHA.

The analysis of covariance results of attitudinal Concept A on the two basic components of evaluative and activity scales is reported in Table 11. On the activity scale a significant interaction effect of the dependent variables Semester (I) and Grade (J) was noted with $F = 5.945$ and $p < .05$.

Since the over-all test of significance indicated that some treatment effects were not equal to zero, this interaction effect was further analyzed with a posteriori simple main effects using t-ratio (Kirk, 1969, p.181). To alleviate the problem of increased probability of significance of effects due to additional tests on the data, the decision was made to establish the more stringent significance level of .025. A critical value of $t = 2.269$ ($df = 318$) was necessary to reach significance. All possible effects of the two independent variables of school-year plan and grade failed

Table 11

Analysis of Covariance Results on Concept A (N = 328)
"For me studying for tests and examinations is"

Source of Variance	Evaluative					Activity				
	df	MS	F	p<	Adjusted Means	df	MS	F	p<	Adjusted Means
Semester (I) (Semester-Conventional)	1	9.893	0.663	.42	13.01 12.65	1	1.695	0.158	.69	12.41 12.56
Grade (J) (Seven-Nine)	1	115.866	7.767	.006[a]	11.37[b] 14.27	1	105.619	9.867	.002[a]	11.13[b] 13.90
Gender (K) (Female-Male)	1	21.472	1.439	.23	12.56 13.08	1	0.450	0.042	.84	12.47 12.54
I x J (Semester-Conventional)	1	27.850	1.867	.17		1	63.639	5.945	.02[a]	(Seven-Nine) 13.03, 12.08[b] 11.95, 12.92
I x K	1	10.255	0.687	.41		1	0.048	0.004	.95	
J x K	1	0.163	0.011	.92		1	1.164	0.109	.74	
I x J x K	1	6.350	0.426	.52		1	20.634	1.928	.17	
Error	318	14.918				318	10.705			
Total	327	15.386				327	11.370			

[a] Significant at predetermined level (.05).

[b] Lower values on concept components of Semantic Differential indicate more positive attitudes.

to meet this criterion. This finding indicated that the interaction effects of these two variables should not be seriously considered in drawing inferences from the analysis of the data.

However, on the evaluative and activity components, the independent variable Grade (J) revealed a significant effect at $p < .01$ level, with $F = 7.767$ and 9.867 respectively. A study of the adjusted means on Table 11 indicate that the grade seven group means on this attitudinal concept are lower and the lower values on the SD indicate more positive attitudes. The conclusion reached is that the attitude measure of Concept A is significantly superior in grade seven groups than in the grade nine groups of this study.

The analysis of covariance on attitudinal Concept B of the semantic differential revealed a significant interaction effect of the independent variables Semester (I) and Grade (J) on both the evaluative and activity scales at the .05 level with $F = 5.697$ and 4.338 respectively (Table 12). This over-all test of significance indicated that some treatment effects were not equal to zero.

Simple main effects tests using t-ratio were used to evaluate all possible comparisons among the means at the more stringent .025 level of significance. The critical value of $t = 2.269$ was met by the first independent variable (Semester (I)) at the grade nine level on both components.

Table 12

Analysis of Covariance Results on Concept B (N = 328)
"For me student and teacher relationships are"

Source of Variance	Evaluative					Activity				
	df	MS	F	p<	Adjusted Means	df	MS	F	p<	Adjusted Means
Semester (I) (Semester-Conventional)	1	143.543	11.008	.001[a]	10.84[b] 9.47	1	45.751	4.244	.04[a]	11.79[b] 11.01
Grade (J) (Seven-Nine)	1	98.864	7.582	.006[a]	8.71[b] 11.38	1	69.105	6.410	.01[a]	10.23[b] 12.46
Gender (K) (Female-Male)	1	120.843	9.267	.003[a]	9.46[b] 10.68	1	6.049	0.561	.45	11.20 11.48
I x J (Semester-Conventional)	1	74.285	5.697	.02[a]	10.68, 11.30[b] 9.86, 8.85	1	46.774	4.338	.04[a]	(Seven-Nine) 11.23, 12.51[b] 10.98, 10.88
I x K	1	5.830	0.447	.50		1	2.498	0.232	.63	
J x K	1	11.180	0.857	.36		1	12.185	0.289	.29	
I x J x K	1	11.237	0.862	.35		1	0.701	0.065	.80	
Error	318	13.040				318	10.781			
Total	327	14.366				327	11.145			

[a] Significant at predetermined level (.05).

[b] Lower values on concept components of Semantic Differential indicate more positive attitudes.

The interpretation of this finding from the adjusted means indicated that the grade nine students' attitudes on the concept dealing with student and teacher relationships were not equivalent for semester and conventional classrooms. The attitude measured by this concept was superior in the conventional school year plan (Means = 8.85 and 10.88) as compared to that of the semester school year plan (Means = 11.30 and 12.51) on the evaluative and activity components respectively at the grade nine level.

One other significant effect noted in the measurement of this particular attitude was that of the independent variable Gender (K) on the evaluative scale at the .01 level with $\underline{F}$ = 9.267 (Table 12). From the adjusted means which were 9.46 for females and 10.68 for males this statistic can be interpreted as the females in the groups had more positive attitudes in relation to Concept B than did the male students as a group.

The analysis of covariance on attitudinal Concept C demonstrated significant main effects of the independent variable Grade (J) at the .01 level with $\underline{F}$ = 6.747 and 7.648 respectively on the evaluative and activity scales (Table 13). The interpretation of these statistics from the adjusted means for grade seven of 10.72 and 10.43 and for grade nine of 12.89 and 12.69 on the evaluative and activity components respectively is that the grade seven students as a group were more positive in attitude as measured by

Table 13

Analysis of Covariance Results on Concept C (N = 328)
"For me class assignments are"

Source of Variance	Evaluative					Activity				
	df	MS	F	p<	Adjusted Means	df	MS	F	p<	Adjusted Means
Semester (I) (Semester-Conventional)	1	8.299	0.665	.42	11.44 11.77	1	27.097	2.941	.09	11.20 11.79
Grade (J) (Seven-Nine)	1	84.227	6.747	.01[a]	10.72[b] 12.89	1	70.472	7.648	.006[a]	10.43[b] 12.69
Gender (K) (Female-Male)	1	36.059	2.889	.09	11.33 12.00	1	0.156	0.017	.90	11.53 11.57
I x J	1	21.401	1.714	.19		1	4.143	0.450	.50	
I x K	1	4.725	0.378	.54		1	3.994	0.433	.51	
J x K	1	13.245	1.061	.30		1	2.891	0.314	.58	
I x J x K	1	2.220	0.178	.67		1	21.220	2.303	.13	
Error	318	12.483				318	9.214			
Total	327	12.652				327	9.140			

[a]Significant at predetermined level (.05).

[b]Lower values on concept components of Semantic Differential indicate more positive attitudes.

this concept than were the grade nine students in this study.

The analysis of covariance results of the attitudinal Concept D revealed significant main effects of the independent variable Grade (J) at the .05 level with $\underline{F}$ = 5.004 and 5.180 respectively on the evaluative and activity components (Table 14). A comparison of the adjusted means for grade seven of 8.55 and 9.97 to those for the grade nine of 10.59 and 11.90 on the evaluative and activity components respectively on this concept indicated once again that the grade seven students as a group had a superior attitude than did the grade nine students that were being evaluated by this study.

On the evaluative scale of Concept D one other significant effect was noted for the independent variable Gender (K) at the .001 level with $\underline{F}$ = 10.363 (Table 14). Further interpretation of this statistic from a comparison of the adjusted means of 9.53 and 10.22 indicated that the female students as a group were superior in attitude relative to this concept than were their male counterparts.

In summary, the analysis of covariance results which have been reported in Tables 11 to 14 and explained in detail were used to draw conclusions on hypotheses H_2, H_3, and H_4. Hypothesis H_2 inferred that the study habits and attitudes in a semester school year plan would be better than those of their counterparts in a conventional school year plan. From the analysis of the data of this study H_2 was not supported. In other words the difference in school

Table 14

Analysis of Covariance Results on Concept D (N = 328)
"For me doing my school work is"

Source of Variance	Evaluative					Activity				
	df	MS	F	p<	Adjusted Means	df	MS	F	p<	Adjusted Means
Semester (I) (Semester-Conventional)	1	15.510	1.403	.24	9.85 9.40	1	5.029	0.508	.48	11.07 10.81
Grade (J) (Seven-Nine)	1	55.338	5.004	.03[a]	8.55[b] 10.59	1	51.296	5.180	.02[a]	9.97[b] 11.90
Gender (K) (Female-Male)	1	114.602	10.363	.001[a]	9.53[b] 10.22	1	22.136	2.236	.14	10.68 11.20
I x J	1	0.303	0.027	.87		1	18.680	1.887	.17	
I x K	1	1.541	0.139	.71		1	0.004	0.000	.98	
J x K	1	24.602	2.225	.14		1	12.257	1.238	.27	
I x J x K	1	0.009	0.001	.98		1	4.017	0.406	.53	
Error	318	11.059				318	9.902			
Total	327	11.615				327	10.195			

[a] Significant at predetermined level (.05).

[b] Lower values on concept components of Semantic Differential indicate more positive attitudes.

year organizational plan had little effect on student study habits and attitudes.

On attitudinal Concept B "For me student and teacher relationships are" the grade nine group in the conventional organization showed a statistically significant more positive attitude than did the grade nine group of the semester school. However, since this effect on attitude was only apparent on two scales of nine dependent measures, it was not considered sufficient evidence to support H_2.

Of the means adjusted for the covariates across the dependent measures for the independent variable of semester/conventional organizational plan (Tables 10 to 14), six of the nine measures were in favor of the conventional group. These were: the SSHA, the evaluative component of Concept A, and the evaluative and activity components of Concepts B and D. However, these differences due to the effect of organizational plan on study habits and attitudes did not reach statistical significance at the .05 level. Therefore, hypothesis H_2 that the study habits and attitudes of seventh and ninth graders in a semester school year plan are superior to those of their counterparts in a conventional school year plan was not supported by this study.

Hypothesis H_3 inferred that the study habits and attitudes of grade nine students would be superior to those of the grade seven

students. The independent variable Grade (J) demonstrated statistically significant effects across all dependent measures. The grade seven students consistently demonstrated more positive study habits and attitudes on all dependent measures than did the grade nine students. Hypothesis H_3 which stated that the study habits and attitudes of ninth graders would be better than those of the seventh graders was not supported by this study. In fact, the evidence revealed from the analysis of data of this study strongly supports a completely opposite hypothesis.

Hypothesis H_4 inferred that the study habits and attitudes of female students in grade seven and grade nine would be more positive than those of the male students. Gender as an independent variable demonstrated statistically significant effects on the study habits and attitudes as measured by the SSHA and on the attitudes as measured by the evaluative scale of Concept B and Concept D. In all cases of significance the female students demonstrated better study habits and attitudes than did the male students. The null hypothesis Ho_4 was not rejected for all dependent measures. However, the study had demonstrated a trend in the direction of the study habits and attitudes of the female students, in the groups being tested, to be superior on some measures to those of the male students, which was inferred by hypothesis H_4.

A smaller independent study on the grade seven group from the semester school year organizational plan was carried out to test hypothesis H_5 which inferred that the core course instruction received during the first semester would not significantly affect the study habits and attitudes of the students involved. The analysis of covariance based on the 67 grade seven students involved using achievement and age as covariates and core course instruction (mathematics and science versus history and geography) as the independent variable did not reveal any statistically significant effects across the dependent measures (Table 15). The study supported hypothesis H_5 which stated that the study habits and attitudes of students who receive instruction during the first semester in mathematics and science do not differ significantly from those of the students who receive instruction in geography and history. In other words, study habits and attitudes are not directly subject related.

Table 15

Analysis of Covariance Results on All Dependent Measures for Core Course Instruction in Semester Plan (N = 67)

Dependent Measure	Source of Variance	df	MS	F	p<	Core Courses	Means Adjusted for Covariates
SSHA	Core Courses	1	494.561	0.571	0.453	Geo. & History	84.98[a]
	Error	63	865.855			Math. & Science	91.66
	Total	66	1017.900				
Concept A Evaluative	Core Courses	1	0.200	0.017	0.896	Geo. & History	12.84[b]
	Error	63	11.189			Math. & Science	12.70
	Total	66	11.046				
Activity	Core Courses	1	1.139	0.129	0.721	Geo. & History	12.44
	Error	63	8.860			Math. & Science	12.12
	Total	66	8.678				
Concept B Evaluative	Core Courses	1	6.845	0.713	0.402	Geo. & History	10.34[b]
	Error	63	9.602			Math. & Science	9.56
	Total	66	10.905				
Activity	Core Courses	1	20.334	3.303	0.074	Geo. & History	11.59
	Error	63	6.157			Math. & Science	10.23
	Total	66	7.216				
Concept C Evaluative	Core Courses	1	0.816	0.082	0.775	Geo. & History	11.74[b]
	Error	63	9.921			Math. & Science	10.47
	Total	66	9.718				
Activity	Core Courses	1	25.294	3.324	0.073	Geo. & History	11.54
	Error	63	7.609			Math. & Science	10.03
	Total	66	7.697				
Concept D Evaluative	Core Courses	1	0.955	0.107	0.745	Geo. & History	9.64[b]
	Error	63	8.949			Math. & Science	9.94
	Total	66	9.010				
Activity	Core Courses	1	11.074	1.499	0.225	Geo. & History	11.35
	Error	63	7.386			Math. & Science	10.35
	Total	66	7.288				

[a]Higher values on SSHA indicate more positive study habits and attitudes.

[b]Lower values on Semantic Differential concepts indicate more positive attitudes.

Chapter 5

DISCUSSION AND RESULTS

There was a statistically significant relationship (r = .33) between the covariate achievement and study habits and attitudes as measured by the SSHA for this group of 328 students. Further analysis of the eight subgroups within the study, divided according to independent variables, demonstrated that this relationship was significant at the .05 level for six of the eight groups. The six subgroups were: semester grade seven males and females, semester grade nine males, conventional grade seven males, and conventional grade nine males and females. Even then, the two correlations which failed to reach a significant level between achievement and study habits and attitudes were within the confidence interval calculated by a t-test for homogeneity of covariance. Therefore, this study supports the findings of earlier studies by Harrington and Roark (1969), Higgins (1967), and Martens (1963) that study habits and attitudes are, to a certain degree, directly and positively related to achievement.

The analysis of covariance on the SSHA scores revealed no significant interactions of the independent variables of organizational plan (semester/conventional), grade (seven/nine), and gender (female/male). However, the independent variables of grade and gender both

produced significant main effects on study habits and attitudes as measured by the SSHA. The grade seven students had better study habits and attitudes than did the grade nine students; the female students had better study habits and attitudes than did the male students.

The findings as a result of differences in gender are in general agreement with studies reported by Kagan and Moss (1962) and Sontag et al. (1958). Female students tend to be more inclined to academic progress at least up to adolescence. The intellectual gap between males and females may be closing as these researchers suggest, but both groups in the study were young adolescents and results are consistent with expectations. Brown and Holtzman (1967) found mean scores for females on study habits and attitudes to be consistently higher than those for males even at the college freshman level. This suggests, that although the "intellectual gap" may be closing, study habits and attitudes may not.

It was the expectation of this writer that study habits and attitudes of the grade nine students would be somewhat better than those of the grade seven students. The reasoning for this hypothesis was that curriculum concepts become more complex between grade seven and grade nine and thus, they require a more sophisticated mode of studying and understanding. Howard and Strombis (1970) suggest that 50% of the general achievement pattern is attained between ages nine

and eighteen or during adolescence. Also, Bloom (1964) and his associates have shown that characteristics such as the development of more positive habits and attitudes in general are linked closely to the age curve of development. The results of the present study suggested the reverse of this hypothesis as far as study habits and academic related attitudes are concerned. In fact, there was a statistically significant effect on study habits and attitudes related to grade, but the grade seven students consistently were more positive than the grade nine students on all the dependent measures of study habits and attitudes.

Perhaps this is not totally surprising. It was stated that adolescence is a stage of development that is marked by acute changes. The adolescent struggle for independence is heightened during this stage of development. According to Erikson (1965) the early adolescent experiences role confusion in his search for identity due to instability regarding independence, autonomy, sex-roles, peer groups, and occupational choice. Identity results when a sense of well-being, a sense of direction, and a sense of self-assuredness is established in the individual. Since the grade nine group is older and considered the "seniors" of the junior high level, teachers and parents allow them more autonomy in completion of school-related tasks and in decision-making. This additional responsibility, when first initiated, appears to create a "slump" in

scholastic-related habits and attitudes. Morris and Renihan (1978) claim that the surge of heterosexual desires also occurs between the ages 12-14 years and that emphasis during this stage is on socialization and identification with peer groups. Because of this greater emphasis on socialization at this age stage and more independence in autonomous decision-making and task completion, habits and attitudes related to academic achievements occupy a less important position in the grade nine lifestyle than they do for the grade seven student. The younger student receives satisfaction and recognition by pleasing the authority figures such as parents and teachers within his environment. Therefore, although the grade nine student is generally more advanced than the grade seven student in physical, psychological, social, and cognitive functioning, the areas of socialization and identification come to occupy a more important position in their daily encounters and recognition for academic achievement and mastery alone may be less important. Perhaps this is only a temporary phase as they develop a more realistic set of their own individual study habits and attitudes independent from close parental and teacher supervision.

The groups of grade nine students in both organizational plans had attended classes on their respective schedule for three years so that any novel effects of organizational planning would be minimized in this study. Also, the sample of students—134 semester and 194

conventional--tested in the study was relatively large for both types of organizational plan which provides a good basis for drawing inferences from the collected data. Considering these facts, the resulting conclusion is that school organizational planning has little effect on the study habits and attitudes of the students in this study and, indeed, is not the key factor affecting student study habits and attitudes. Therefore, the contention that semestering aids in the formation of better study habits and attitudes due to increased motivation and interest (Bramwell and Mann, 1973; Dravland, 1970; Ellwood, 1970; Fehlberg, 1968; Horovatin, 1974; and Shaw, 1977) and immediacy of goal (Bramwell and Mann, 1973; Ellwood, 1970; and Fehlberg, 1968) for secondary school students is not supported by the findings of this study at the junior high level.

The second dependent measure, the Semantic Differential, on attitudinal concepts related to academic activities revealed similar results. A significant interaction between the independent variables of organizational plan and grade occurred on the evaluative and/or activity components of two concepts. These were: the activity component of Concept A "For me studying for tests and examinations is" and the evaluative and activity components of Concept B "For me student and teacher relationships are".

A posteriori tests were used to check the simple main effects of the independent variables. On the activity scale of Concept A the statistical test indicated that the simple main effects of organizational plan and grade failed to reach statistical significance at the .025 level and should not be considered seriously in the analysis of the results. However, as an independent main effect the variable of grade had reached a statistically significant level of .002. Closer examination of the adjusted means demonstrated that the grade seven students had a more positive attitude on this component of the concept than did the grade nine students. This finding supported the similar result of all other dependent measures.

On the evaluative and activity components of Concept B a posteriori tests indicated that the independent variables of organizational plan and grade demonstrated statistically significant interaction effects at the grade nine level. The grade nine students in the conventional plan had a more positive attitude toward student and teacher relationships than did the grade nine students in the semester plan. This result is not explained by the study. Some speculative explanations follow.

The difference in attitude may be an extension from the students' home environments. Socioeconomic level of the groups employed in the study was evaluated on the Pineo and Porter (1967) ratings.

This process equated, to some degree, the students' backgrounds and lifestyles which are partially dependent on the socioeconomic status of the home, but the effects of individual experiences could only be assumed to be comparable.

A second explanation may be that the grade nine group in the conventional plan are attending a slightly larger junior high which is able to offer a more extended extracurricular activity schedule due to better gymnasium facilities. This provides for more contact between the students and the physical education staff in a more informal setting. Perhaps this influences the relationship between students and teachers positively and is conveyed to other school and classroom related activities.

A third possible explanation is that there may be an actual difference in attitude relative to student and teacher relationships which is cumulative over the three-year attendance period in a conventional plan as compared to a semester plan. Statements about an improvement in student satisfaction and well-being due to better student-teacher relationships (Bramwell and Mann, 1973; Horovatin, 1974) in secondary semester plans were not supported by this study at the junior high level. Other variables such as personalities of students and/or teachers may be different between the two schools at the grade nine level, which are non-existent or less influential at the grade seven level.

In order to determine the specific reason(s) for the obtained interaction effect of organizational plan and grade further in-depth investigation would be required. Since this difference in attitude was revealed only on one concept of all the dependent measures, too much emphasis on it could distort the importance attributed to the broader results of the study which were more clearly supported by the data.

The independent variable grade significantly affected all attitudinal concepts. The grade seven group demonstrated more positive attitudes on these school-related concepts as measured by the SD than did the grade nine group. This finding reinforces that based on the SSHA. It is probable that the grade seven group is more concerned about the recognition which they receive from the authority figures in their environment for academic achievement. Peer group socialization and identification is in the earlier stages and does not yet have the strong influence that it may have in grade nine.

On the evaluative component of Concepts B and D the independent variable gender demonstrated statistically significant effects. This, too, was in agreement with the results of the SSHA. The female group of students was more positive on attitude related to student and teacher relationships and doing school work carefully than was the male group of students in this study. Perhaps female

students perceive academic related concepts such as these as more important to their personal satisfaction than do male students. Studies by Brown and Holtzman (1967) and Kagan and Moss (1962) support this contention.

Implication of the Study

The results of the present study suggest that school organizational planning does not significantly affect student study habits and attitudes in general. It adds support to the former studies that have found female students to have more positive study habits and attitudes than do their male counterparts. It also points out an interesting fact about academic behavior of the adolescent in which the older students although more advanced in physical and cognitive development do not have the more positive study habits and attitudes at the junior high level. This attitude decline may be due to the ineffectiveness of school to stimulate them.

The school organizational plan is not the key factor affecting students' study habits and attitudes related to scholastic activity. Perhaps the organizational plans (semester/full-year) described in this study are not distinctly different to facilitate measurable effects. A trend in the results for a greater number of comparative group means to favor the conventional (full-year) organization at the junior high level, although not statistically significant, leaves the introduction of semester plan in the junior high somewhat questionable as far as promoting more positive study habits and attitudes.

Limitations of the Study

Due to the fixed-nature of the model (intact classes and form of semester plan) the internal validity and generalizability of the findings is restricted to groups of subjects of similar age, ability, and background. Some confounding variables that may have been operating in the present study are school variables such as instructional and learning procedures, teacher personalities, curriculum requirements, and possible order effects of test administration and experimenter bias.

The sample population was drawn from two self-contained junior high schools. Results may differ if samples were drawn from Middle Schools (grades 5-8) or from schools which are organized with grades K-8, 9-12, or K-12.

The data collection was conducted over a three-week period embracing semester change-over. Both schools had just completed mid-year examination schedules and the period of reporting was in progress.

The SD was a self-developed instrument to be used as a second dependent measure. Further studies on standardization and validation of this measure are required.

Suggestions for Further Research

Presently many standardized measures are available for use in the elementary or secondary school, but there is a lack of such material available for use in the middle years. Better instruments

encompassing the ages of 11 to 16 need to be designed, standardized, and validated for use with the junior high adolescent. These include measures for developmental trends in both cognitive and affective behavior.

Longitudinal studies of the study habits and attitudes of students receiving instruction under differing organizational plans may more accurately assess any differences and allow for better interpretation of changes in study habits and attitudes during the adolescent development years. Also, differences in variables such as physical plant structure (i.e., gymnasium and resource centre availability) and other specific school or regional characteristics should be investigated. Studies of this nature would add additional information to test the hypothesis that organizational planning affects student behavior.

Semestering has many connotations. Perhaps the semester plan, instituted at the junior high level, does not have distinctively different characteristics from a full-year plan to facilitate measurable effects. A synthesis of all research on semester systems in Canada would help to identify the various semester plan alternatives within and between our educational systems and allow for further assessment of effective, distinguishing characteristics.

To date, researchers have not fully investigated the area of development in the middle years (Morris and Renihan, 1978). The hypotheses that processes such as socialization and identification

become more important and that there may be a concurrent decline in study habits and attitudes as students in early adolescence are allowed more autonomy needs further investigation.

Research findings concerning student attitudes, control, self-concept, and transitional stages of development are important for effective structuring. Many junior high schools either adhere to conventional teaching and learning practises even while changing the organizational plan or restructure themselves upon the philosophy and practise of the senior high. Before a more accurate interpretation can be made regarding the effects of organizational plan (semester/full-year) on study habits and attitudes at the junior high level, more research needs to be conducted at this level rather than relying on the results and inferences of senior high studies.

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APPENDICES

APPENDIX A

SAMPLE SCHEDULE OF CONVENTIONAL PLAN

Sample Schedule of Class on a Conventional School Plan

Day	One	Two	Three	Four	Five	Six
Time						
9:00–9:10	Opening Exercises					
9:10–9:50	English	Home Ec. & Shop	Math.	English	Science	Math.
			Change classroom			
9:50–10:30	French		Soc. St.	English	Phys.Ed.	Soc. St.
			Change classroom			
10:30–11:10	Soc. St.		English	Science	English	Science
			Change classroom			
11:10–11:50	English		English	Math.	French	Soc. St.
11:50–1:20	Noon					
1:20–2:00	Soc. St.	Science	Phys.Ed.	French	English	French
Change classroom						
2:00–2:40	Science	Phys.Ed. (gym)	Math.	Study	Math.	Fitness (Theory)
Change classroom						
2:40–3:20	Phys.Ed. (gym)	Math.	French	Soc. St.	Science	Phys.Ed. (gym)
Change classroom						
3:20–4:00	Math.	English	Science	Soc. St.	Soc. St.	English

APPENDIX B

SAMPLE SCHEDULES OF SEMESTER PLAN

Sample Schedule of Semester School Plan for First Semester in Mathematics and Science

Day	One	Two	Three	Four	Five	Six
Time						
9:00–9:05	Opening Exercises					
9:05–10:00	Phys.Ed.	Math.	Science	Phys.Ed.	Home Ec. & Shop	Math.
10:00–10:55	Math.	Science	Science	Science		Science
10:55 11:00	Break					
11:00–11:55	Mini–Option	English	Math.	English		Study
12:00–1:20	Noon					
1:20–2:05	Math.	Science	English	Health	Math.	English
2:05–2:50	Science	Math.	Health	Math.	English	Math.
2:50–2:55	Break					
2:55–3:45	English	English	English	Science	Science	English

Sample Schedule of Semester School Plan for First Semester in History and Geography

Day	One	Two	Three	Four	Five	Six
Time						
9:00–9:05	Opening Exercises					
9:05–10:00	History	History	Art	Geo.	History	Home Ec. & Shop
10:00–10:55	Phys.Ed.	English		English	English	
10:55–11:00	Break					
11:00–11:55	Mini-Option	History	English	Phys.Ed.	Study	
12:00–1:20	Noon					
1:20–2:05	English	English	Geo.	Art	Geo.	English
2:05–2:50	Geo.	Health	History		English	History
2:50–2:55	Break					
2:55–3:45	History	Geo.	Study		Health	Geo.

APPENDIX C

CORRESPONDENCE

The Brandon School Division No. 40

1031-6th Street Brandon, Manitoba R7A 4K5

TELEPHONE: 728-0184

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August 24, 1977

Mrs. Fran Dagg
33 Garwood Drive
BRANDON
Manitoba

Dear Mrs. Dagg:

Your letter of August 19, 1977, was considered by the Board of Trustees at its regular meeting held Monday, August 22, 1977, and the following motion was passed:

> "That the request of Mrs. Fran Dagg, Teacher, to conduct a study of twelve-year-old and fourteen-year-old students in the School Division, as outlined in her letter of August 19, 1977, be approved, subject to the approval of the Principals involved.".

Your materials and results when compiled will be, I am sure, information for the Administration and Board.

Yours truly,

E. H. Harrison
Assistant Secretary-Treasurer

EHH:cem

c.c. R. Swayze, Assistant Superintendent
Principal, Harrison Junior High School
Principal, Earl Haig Junior High School

APPENDIX D

SEMANTIC DIFFERENTIAL

ADJECTIVE DESCRIPTORS

NAME: ..... AGE: ..... SEX: .....

SCHOOL: ..... GRADE: .....

Place an X in that one space of the five between each adjective pair that best indicates your perception of the following school-related concept. The closer you place your X toward one adjective or the other, the more you think that adjective better describes the concept than the other.

A For me studying for tests and examinations is:

1.	fast	_____:_____:_____:_____:_____	slow
2.	active	_____:_____:_____:_____:_____	passive
3.	soft	_____:_____:_____:_____:_____	hard
4.	delicate	_____:_____:_____:_____:_____	rugged
5.	ugly	_____:_____:_____:_____:_____	beautiful
6.	dull	_____:_____:_____:_____:_____	sharp
7.	light	_____:_____:_____:_____:_____	heavy
8.	sweet	_____:_____:_____:_____:_____	sour
9.	good	_____:_____:_____:_____:_____	bad
10.	cold	_____:_____:_____:_____:_____	hot
11.	long	_____:_____:_____:_____:_____	short
12.	sad	_____:_____:_____:_____:_____	happy

B For me student and teacher relationships are:

13.	fair	_____:_____:_____:_____:_____	unfair
14.	happy	_____:_____:_____:_____:_____	sad
15.	wide	_____:_____:_____:_____:_____	narrow
16.	weak	_____:_____:_____:_____:_____	strong
17.	deep	_____:_____:_____:_____:_____	shallow
18.	thick	_____:_____:_____:_____:_____	thin
19.	slow	_____:_____:_____:_____:_____	fast
20.	kind	_____:_____:_____:_____:_____	cruel
21.	cold	_____:_____:_____:_____:_____	hot
22.	red	_____:_____:_____:_____:_____	green
23.	sweet	_____:_____:_____:_____:_____	sour
24.	active	_____:_____:_____:_____:_____	passive

Place an X in that one space of the five between each adjective pair that best indicates your perception of the following school-related concept. The closer you place your X toward one adjective or the other, the more you think that adjective better describes the concept than the other.

C For me class assignments are:

25.	relaxed	_____	_____	_____	_____	_____	tense
26.	heavy	_____	_____	_____	_____	_____	light
27.	dull	_____	_____	_____	_____	_____	sharp
28.	clear	_____	_____	_____	_____	_____	hazy
29.	hot	_____	_____	_____	_____	_____	cold
30.	awful	_____	_____	_____	_____	_____	nice
31.	hard	_____	_____	_____	_____	_____	soft
32.	large	_____	_____	_____	_____	_____	small
33.	active	_____	_____	_____	_____	_____	passive
34.	thick	_____	_____	_____	_____	_____	thin
35.	red	_____	_____	_____	_____	_____	green
36.	dark	_____	_____	_____	_____	_____	bright

D For me doing my school work carefully is:

37.	worthless	_____	_____	_____	_____	_____	valuable
38.	awful	_____	_____	_____	_____	_____	nice
39.	delicate	_____	_____	_____	_____	_____	rugged
40.	strong	_____	_____	_____	_____	_____	weak
41.	fast	_____	_____	_____	_____	_____	slow
42.	cold	_____	_____	_____	_____	_____	hot
43.	heavy	_____	_____	_____	_____	_____	light
44.	thick	_____	_____	_____	_____	_____	thin
45.	beautiful	_____	_____	_____	_____	_____	ugly
46.	dull	_____	_____	_____	_____	_____	sharp
47.	passive	_____	_____	_____	_____	_____	active
48.	white	_____	_____	_____	_____	_____	black