THE UNIVERSITY OF MANITOBA

FLEXIBLE MODULAR SCHEDULING INNOVATIONS: A SURVEY OF ATTITUDES

by

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ABSTRACT

The implications of a book by Gaynor Petrequin on modular flexible programming were the initial stimulus for this study. A review of the literature on flexible scheduling revealed much information about the implementation of such programs in various schools in North America, but little had been written on the subject of evaluation. In general, attempts to evaluate flexible programs had been indirect.

The writer assumed that by studying the attitudes of staff and students in schools using flexible programs some insights which could contribute to educational research might be gained.

The purpose of this study was to describe modular flexible scheduling innovations. The study further surveyed staff and student attitudes with regard to such innovations and attempted to determine whether or not certain pupil behaviours were related to flexible modular scheduling.

The population chosen for the study was the entire staff and student body at Vincent Massey Collegiate, Fort Garry, Manitoba, and at Red River High School, Grand Forks, North Dakota.

The data was gathered by two questionnaires devised by the writer. The Staff Attitude Toward Flexible Modular Scheduling Innovations questionnaire surveyed teachers, administrators, librarians and anyone else directly associated with the school learning process, while the Student

Attitude Toward Flexible Modular Scheduling Innovations questionnaire gathered responses from students in grades ten, eleven and twelve.

Both the literature and the two schools surveyed revealed that many forward strides had been made toward personalizing and individualizing the instructional program for each student.

The staff of both schools were highly in favour of flexible modular scheduling. They perceived gains in all pupil behaviours outlined in the thesis.

Students indicated the greatest gains in interest, motivation level, social adjustment, and general industry and application to task.

The writer concluded that a relationship between flexible scheduling and gains in certain pupil behaviours exists.

From the descriptive data it was further concluded that flexible scheduling provides for increased educational opportunities for students.

ACKNOWLEDGMENTS

I wish to express appreciation to Dr. H.E. May (chairman) and committee members Dr. N.P. Isler, Professor D. Weiss and Professor T. Meadows for their invaluable assistance in the planning and organizing of this study.

I further acknowledge the staff and students at both Vincent Massey Collegiate and Red River High School for their excellent cooperation in the collection of data.

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N.A. (Mick) Hersak

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CHAPTER I

THE STUDY AND DEFINITION OF TERMS USED

At one time it was thought that unitary, homogeneous grouping was the answer to the quest for quality instruction. With experience, disillusionment has grown involving this crude technique. Unequals are treated as equals when all students are given the same educational diet which may be satisfactory for the average student in a given subject. Gifted students, however, are often plunged into a pit of frustration as they are harnessed to a program that shackles their talents and restricts their creativity. Slow learners are sometimes stretched to the psychological breaking point as they are asked to leap academic hurdles they cannot approach. Grouping by student selection of options makes little provision for the fact that students are capable of attaining higher standards in some subjects than in others.

Some attempt must be made on the part of educators to personalize and individualize the instructional program in order that each individual student, with unique capabilities, interests and background, has the best opportunity to develop the full measure of his talents. Part of the answer to such an attempt lies in the scheduling of a school.

I. THE STUDY

Purpose of the study. The purpose of this study was (1) to describe several modular flexible scheduling innovations; (2) to present

student and staff attitudes with regard to such scheduling innovations, as revealed through a questionnaire study; and (3) to determine whether or not there were any substantial gains or losses in the following nine pupil behaviours that can be directly related to flexible modular scheduling: (a) interest, (b) motivation level, (c) adjustment to learning situation, (d) general industry and application to task, (e) social adjustment, (f) creativity, (g) critical thinking, (h) independent inquiry, (i) academic achievement. An attempt to evaluate a flexible program at Marshall High School in Portland, Oregon was based on these areas.[1]

Significance of the study. During the month of November, 1970, an interim report was issued by the Core Committee[2] on the reorganization of secondary schools.

The report outlines a philosophy and the purpose of secondary education which the Core Committee feels will be relevant in the 1970's.

In some of its recommendations for implementation of the new program the report states that (1) there must be greater emphasis on individual student needs which invariably brings with it an increase in unscheduled time and the need for adequate resource centres and that (2) the introduc-

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[1]Gaynor Petrequin. Individualizing Learning Through Modular-Flexible Programming. New York: McGraw-Hill, 1968.

[2]The Core Committee on the Reorganization of the Secondary Schools. "A Proposal For The Reorganization Of The Secondary Schools Of Manitoba." Province of Manitoba: Department of Youth and Education, November 1970.

tion of a variety of relatively new administrative procedures, e.g., the individualization of student programs, and flexible scheduling go hand in hand.

Knowledge gained from the experiences of those in schools already using forms of flexible modular scheduling will be of great value to the Department of Youth and Education, to the plans of the Core Committee and other similar reorganization committees, to those who will be affected by such plans and particularly to those who will be ultimately responsible for their implementation and success.

II. DEFINITIONS OF TERMS USED

Modules. The school day can be broken up into small segments known as modules. Modules can vary in length from fifteen to fifty minutes. In many instances they resemble the traditional school period.

Scheduling. Throughout the report of this study, the term "scheduling" shall be interpreted as the timetabling of students, staff and facilities.

Individualization. Since the survey was conducted in only two schools, the term "individualization" shall be interpreted as a unique individual program for each student in these two schools.

Independent study. In this report the term shall mean a student's constructive use of unscheduled time during the school day.

Independent study time. Those modules during which a student is not

scheduled for regular formal class meetings are known as independent study time. In the two schools surveyed, this time varied from 20 to 50%.

Resource centre. The resource centre is an instructional materials centre. It is basically a traditional library with materials such as books, pamphlets, magazines, and periodicals. In addition, many films, film strips, film loops, video tapes, tapes, tape recorders, records are stored in this centre. If any materials are not on hand, they are usually available from other nearby sources.

The facility has seating for groups as well as individuals.

The staffing of the centre is by para-professionals and professionals.

Staff. The staff are the professional and para-professional personnel such as teachers, administrators, librarians, clerks and technicians employed in a school.

Gains or Losses. In the report reference is made to substantial gains or losses in pupil behaviours. For this particular reference, substantial shall mean not imaginary, true, real, important, essential, considerable in amount, firmly established and solidly based.

Contract. Contract is a mode of individual instruction, independent study and teacher planning with the bulk of the responsibility on the student.

Informal study area. This is a multi-purpose area found in both

schools where students and staff can meet for discussion, films, lunches, coffee breaks, homework or relaxation.

III. A DESCRIPTION OF FLEXIBLE SCHEDULING

The term "flexible scheduling" refers to various arrangements used in schools for budgeting the time of students and teachers in response to their individual and ever-changing needs. Flexible scheduling is only one item within a cluster of interdependent, interrelated innovative practices.

In this type of scheduling an attempt is made to individualize instruction and to organize the instructional program in order that each student is able to adjust the program to fit his individual needs. It is the curriculum that is adapted to the student, rather than the student to the curriculum.

For example, a student has the opportunity to choose his program from a wide range of subjects offered at varying degrees of difficulty and with differences in approach, content, pace and emphasis. Students can be scheduled in more than one "grade" and in more than one "area" such as general, college entrance, vocational or business education. Bonus and honours courses are also available as well as enrichment options.

Classes are of varying sizes within and between courses. Sometimes large assembly classes are held; at other times small inquiry groups meet. In addition, part of the day is spent in independent study.

Instructional groups meet at varying frequencies and for varying lengths of time. Some classes meet every day; others do not. Some meet for several modules in succession.

Team teaching and team planning are possible for most of the disciplines. The staff decides in what areas these practices are most suitable as well as practical.

The above-mentioned innovations would not be possible without modern technology.

The principals at the two schools surveyed use computerized flexible modular scheduling to assign students to classes. They look at curriculum, staff, plant and student needs. Depending upon the desired output, the computer offers a wide variety of plans for large or small groups, team teaching, various class scheduling for meetings per week, etc. Time is a variable, not a constant. Thus the principal is forced to look at the educational process as a total system of interrelated systems of variables that can be manipulated within certain limits to achieve the desired output.

The scheduling provides for potential opportunity. Whether or not it can be held to account for actual learning remains to be determined.

IV. DELIMITATIONS OF THE STUDY

The study surveyed the staff and students at two schools.

Vincent Massey Collegiate is located in Fort Garry, Manitoba, a suburb of Metropolitan Winnipeg. It has an enrolment of approximately 1000 in grades ten, eleven and twelve. The staff numbers 63 which includes clerks and technicians. The staff is stable with a high retention rate.

The physical plant is a relatively modern ten year old building.

A large resource centre, multi-purpose rooms, extra laboratories, a 175 seat theatre, and an informal study area were added two years ago.

The community is in the university area and the socio-economic level is above average.

Red River High School is located at Grand Forks, North Dakota, about 180 miles south of Winnipeg. The enrolment of the school is about 1100 made up of students from Grand Forks City and the nearby Grand Forks Air Base. There were 60 teachers, numerous clerks and several volunteers on staff in 1970-71.

Many courses are on a contract basis.

The physical plant consists of a four year old very modern building with a large resource centre and smaller resource areas for the main subject area departments. Other features include a 400 seat theatre and an indoor swimming pool adjacent to the physical education wing.

The purpose of describing the two surveyed areas was (1) to provide some background information on the sites and (2) to emphasize clearly that no generalization can be made about other schools or systems not included in the study.

Finally, the schools surveyed were both in their second year of operation under a flexible modular scheme at the time of the study.

V. ORGANIZATION OF THE REMAINDER OF THE THESIS

Chapter I has been used to describe the problem. In Chapter II a review of the related research and literature is presented. Research procedures are discussed in the third chapter. The survey results are

described and discussed in Chapter IV. The final chapter includes a summary, conclusions and some implications for further research.

CHAPTER II

REVIEW OF THE LITERATURE

I. REVIEW OF THE RELATED LITERATURE

The genesis of the relatively new educational design known as flexible modular scheduling was initially outlined by Dr. J. Lloyd Trump, noted American educator and writer, in 1959, in his provocative booklet, "Images of the Future".[3] He gave the initial impetus to make secondary schools better and different through curriculum reform based on a total flexible schedule organization.

In the spring of 1960, Stanford University, aware of Dr. Trump's broad outline recommendations and mindful of education's technical lag, launched a computer-based High School Flexible Scheduling and Curriculum Study. Financed primarily by the Ford Foundation, the prime objective of the study group was to develop the programming and systems necessary to construct a generalized computer scheduling procedure which could satisfy the widest possible range of schedule design.

The key to the programming and systems problem was resolved by Professor R.V. Oakford, an industrial engineer and computer scientist on the Stanford staff. His process became known as the Stanford School

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[3]J. Lloyd Trump. "Images of the Future." Urbana, Illinois: National Association of Secondary School Principals, 1959.

Scheduling System or SSSS or S^4.[4] This system grew directly from frustrations schoolmen encountered in trying to experiment with new curriculums and other promising educational innovations within the inflexible traditional school schedule. Educational innovations, new curriculums, and new teaching techniques simply could not be scheduled together in the traditional school. The qualitative objectives of educational change were waiting for some technological assistance with the quantitative problems of scheduling. The computer, with its massive capability for manipulating data rescued administrators in difficult dilemmas.

Using diverse talents, the Stanford study was able to implement the educational reform ideas expressed by Dr. Robert Bush and Dr. Dwight Allen of the Stanford staff in their book, A New Design for High School Education: Assuming a Flexible Schedule, through the technology of Oakford's computer scheduling system.[5]

Shortly thereafter, the Massachusetts Institute of Technology developed the GASP (Generalized Academic Simulation Program or General Assignment Student Program), another approach to the scheduling of schools by generating master schedules.

GASP and S^4 are both complete school master scheduling systems,

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[4] R.V. Oakford. Stanford School Scheduling System, Stanford University, California, Department of Industrial Engineering, 1960.

[5] Robert N. Bush and Dwight W. Allen. A New Design for High School Education: Assuming a Flexible Schedule. New York: McGraw-Hill, 1964.

each made up of a series of written programs which describe the necessary procedures which the computer must carry out in processing data on teachers, students, hours, rooms and whatever other resources the school may elect to introduce as factors to compute a comprehensive master schedule upon which the school will function throughout the school year.

Each system employs a different approach to the problem. In GASP, the master schedule is generated from successive computer runs, each of which is updated or revised through human analysis of the previous run, a process which may be repeated as many as ten or twenty times and which may require several months to arrive at a satisfactory schedule.

S^4, on the other hand, seeks an algorithmic solution to school scheduling which allows more pre-programming of decision-making in the computer system. The algorithmic approach assumes the components of the scheduling problem can be accurately and sequentially defined in sufficient detail to program the computer. As algorithms improve, so should S^4. Acceptable master schedules have been produced in three computer runs or less.

Although S^4 is more sophisticated than the approach taken by GASP, both systems have comparable data input requirements. They are not the only two computer scheduling systems available, but they do have the longest and most varied experience.

In selecting a computer scheduling system, one must consider its flexibility in permitting alternative designs in the instructional pro-

gram. It must be remembered that no system will provide the rationale for the educational design that is finally to be scheduled.

The design of the educational programs in any one of the schools using computerized flexible modular scheduling is unique. The program of each school has been designed by its own staff with its unique local circumstances in mind. The main advantage of computer assistance in scheduling is that it allows a more efficient balancing of resources, which include students, curriculum, staff, facilities, and time, within a more effective educational design (small, medium and large-size group modes of instruction and individual study). It does not build flexible schedules, but its dexterity gives educators the opportunity to build them.

The means for modular flexible scheduling in the secondary school existed but field testing was needed. Many school administrators agreed with the basic assumption that there was a better way to organize the time element of the curriculum. To proceed past the verbal stage was another matter. A great deal of courage, foresight, outstanding leadership and community support was needed to launch initial programs.

In 1962-63, four pilot schools, (1) Homestead High School, Sunnvale, California, (2) Lincoln High School, Stockton, California, (3) Virgin Valley High School, Mesquite, Nevada, and (4) Marshall High School, Portland, Oregon, with their faculty and administrators began devising unique structures for each course. Innovations such as large group lec-

tures, team teaching, small group seminars, extended laboratory periods, open labs, learning resource centres and independent study were incorporated into the flexible modular schedule.

These pilot schools faced innumerable frustrating problems during their first years. Many educational decisions needed to be made at each stage of the scheduling process. Refinements were continually made in procedures designed to analyze, correct and regenerate the basic schedules. Administrators and faculties were concerned about schedule production delays close to absolute deadlines.

From the first field trials involving four schools, the number rose to twenty-two junior and senior high schools in the 1964-65 school term, Byhre reports fifty-five schools, including his own, using modular scheduling during the 1966-67 term in the United States.[6] "In a recent national survey of innovative practices, 14.8% of 7,368 high schools responding reported the use of flexible scheduling. This figure, although a general measure of nationwide use, indicates clearly the flexible scheduling is gaining acceptance in our nation's schools."[7]

Here, in Canada, it is difficult to pinpoint exact numbers involved in flexible modular scheduling or the approximate dates that

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[6]Edward Byhre. "A Proposal for Curricular Reform Through Scheduling Innovations at Bloomington Junior High School." (Mimeographed.)

[7]Gordon Cawelti. "Innovative Practices in High Schools. Who Does What and Why and How?" The Nations Schools, vol. LXXIX, (April, 1967) p. 55-88.

schools embarked upon these innovations. Hemphill, in a Canadian survey taken in 1970, reported fifteen schools across the nation using data processing techniques for school schedules and thiry-one local administrative units planning to do so.[8] Of the fifteen mentioned above, one could suppose that very few were actually involved in flexible modular scheduling.

From very modest beginnings almost ten years ago, computerized flexible modular scheduling now affects daily thousands of schoolmen and students. What are some of the reasons why traditional scheduling, used for sixty years, was challenged and will continue to be challenged daily by the nation's educational decision makers?

Dr. G. Petrequin states that because of individual conferences and small group sessions, a student can speak, question, discuss and criticize.[9] Through independent study a student learns responsibility. He must choose how to use unscheduled time. The resources and opportunities are there, but the choice of pursuit is with the individual. The belief in the individual is not new, but the means to implement this belief is new.

There are others who think the schedule provides greater opportunity for students to increase their learning. Manlove and Beggs maintain that the flexible schedule brings together a variety of instructional talent and that the flexible schedule has this talent regularly available for

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[8]H. David Hemphill. "Electronic Data Processing in Canadian Elementary-Secondary Education" (paper read at the conference, 'The Promised Land of The Computer - Promises, Perils, Potentials', Toronto, May, 1970).

[9]Gaynor Petrequin. Individualizing Learning Through Modular-Flexible Programming. New York: McGraw-Hill, 1968.

many students.[10] The student becomes a more efficient learner. He has more chance to exchange ideas or participate in intellectual discussion in small groups or on a one-to-one basis.

Wiley and Bishop list the following advantages to students.[11] They can now get away from the pattern of conformity set early in life. The opportunity for a student to learn how to use his own time must happen some place. There is no grade level at which this should take place as students at various levels grow in their ability to use unscheduled time.

Another major benefit to students is the number of courses that a flexible schedule can offer. The schedule at times will have modules in it open for activities and clubs which normally could not function during the regular day. Students can carry a full program and still find time during the school day to participate in a program of their creation. Classroom interruptions become minimized. A student can see a counselor or conduct personal business during free time.

Bush and Allen state that computer-based flexible modular scheduling may well be one of the more important technological contributions to the educational programs of the high schools. They include the following description of what one can observe upon entering a school using the new de-

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[10] D.C. Manlove and David W. Beggs III. Flexible Scheduling. Bloomington, Indiana: Indiana University Press, 1965.

[11] W.D. Wiley and L.K. Bishop. The Flexibly Scheduled High School. New York: Parker, 1968.

sign.

> Schools that have begun to implement the ideas set forth in the new design and that are using computers to generate their schedules have also begun to adopt a variety of educational practices which they had not previously considered. New curricular alternatives have become possible, causing a definite break with traditional organization and teaching. The general academic pace has been quickened. Teachers have more time for teaching. Pupils have more time for learning. A considerable portion (20 to 50%) of the student's time has been programmed for independent and individual study. Libraries are full of students. Circulation of books, especially nonfiction, is sharply up. Discipline problems are down. Class size and period length can vary considerably. The individualization of instruction is different in such schools. Achievement rather than time spent in a class becomes the criterion for successful completion of a course. Development of independent study programs provide the students with an opportunity to budget their time. Resource centres have become exciting locations for independent work. Homework may wither as the resource centre flourishes. Flexible schools are using programmed learning as better materials become available. Flexible schedules permit nongraded programs, where grouping by age is no longer a predominate factor. These schools are systematically investigating new ways of employing professional personnel in team combinations with various levels of assistants.[12]

Not to be ignored are the benefits to staff and administrators that accompany flexible modular scheduling. Staff have more time during their regular day to also make their own decisions. Generally more work is accomplished by people who are actively involved in the decision-making process and who are enjoying their occupations. For the administrator, the master schedule is the foundation of the school. As the schedule goes so goes the school and the enhancement or the lessening of the effectiveness

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[12]Bush and Allen, op. cit., p. 185-186.

of the educational program. There is a greater probability that enhancement will take place since the administrator has the extra variable, time, which the computer can manipulate to meet required needs.

Conversion of a school to flexible modular scheduling does not eliminate any of the teacher's responsibilities. It may, in the opinion of Dunlop, add substantially to them as the teacher's role is potentially broadened to include the full scope of activities expected of a professional educator.[13] The teacher in a flexible school is ordinarily not committed to a classroom throughout the entire day. He may elect to spend unscheduled time in working with a student, having a conference with parents, developing a curriculum report, preparing a salary proposal, studying a journal, previewing films or assisting an intern teacher. He may determine which students require additional formal study or perhaps more independent time. Other staff members may want him for a conference on students or teaching modes. Unscheduled time provides members of a staff an opportunity to deal with their many preparatory, evaluative and research activities during the course of the day. Flexible modular scheduling can never eliminate long night and weekend hours from the teacher's calendar; perhaps it can reduce them significantly.

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[13]Richard S. Dunlop. "Toward Improved Professional Practice Under Flexible-Modular Scheduling," The Journal of Teacher Education, vol. XIX, (Summer, 1968) p. 159-164.

According to Dunlop, education by appointment is a component of the modular schedule. Contending on a professional level with the individual needs of students can become a realistic part of the teacher's role on a daily appointment basis.

With the advent of flexible scheduling the day of a classroom for every teacher becomes a thing of the past. A teacher may find himself operating out of several classrooms. His operational base must become a teacher office, perhaps shared with other colleagues. The offices, however, cannot be scattered throughout a school plant, since the teacher must constantly communicate with his fellow staff members.

For the specialist in education such as the counselor, there are new opportunities to do a better job. For example, student appointments can be scheduled without disrupting student classroom education. Drop-in traffic increases markedly making the counselor's availability considerably greater. Student use of published information and materials increases many fold. Course conflicts can usually be resolved without compelling a student to drop an equally desirable credit.

Similar benefits accrue other pupil personnel workers such as nurses and psychologists. Most important, the principal is provided with an opportunity to become more an educator than an office manager.

Personnel at Williamsville Central High School in New York claim that by adopting modular scheduling the school was able to accommodate 450

students more than what the school was designed for.[14] The master schedule was built around student course requests; students aren't fitted into predetermined slots. Students report for their first class and leave when their last one is over if they wish. In addition, final examinations are given when students are ready. Individuals who cannot cope with unscheduled time are given assistance and supervision to progressively accept more responsibility for their time.

In a unique program at Culver City High School in California, where the flexible schedule also rotates, fifty per cent of the staff are available for individual conferences and tutoring when fifty per cent of the students have unscheduled time.[15] Advantages are many. Students get more time to prepare for classes. There are more and more varied electives. There is more opportunity to join in extra-curricular activities, and greater ease in obtaining individual help from teachers. Teachers teach fewer hours each day. They have more hours to prepare and to plan, more time to help individual students, fewer disturbing interruptions in the classroom and fewer supervisory duties.

There are those who believe that flexible scheduling has been overrated. In a report by the principal from Conard High School in Connecticut,

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[14]John W. Allan. "Computer Builds Modules Around Student Requests," The Nations Schools, vol. LXXXII, (August, 1968) p. 29-30.

[15]Robert W. O'Hare. "Rotating Scheme Squeezes In More Planning, Study Time," The Nations Schools, vol. LXXXII, (August, 1968) p. 30-31.

it is stated that in spite of many of the so-called advantages of flexible scheduling innovations, the greatest nuisance is keeping track of students who cannot handle that extra freedom during their unscheduled time and how to control noisy and aimless wandering in the halls.[16]

Thompson states one of the hardest concepts for most teachers to grasp is the independent study time.[17] Many teachers feel that "spares" for students are necessary evils more than opportunities for student progress. Most of us agree that a student will learn more when he is actually engaged in work of some sort. A kind of synthesis must also take place in the student's mind before any genuine and lasting learning can be said to have occurred. Both of these requirements are best attained when the student is working alone. Traditional homework must be avoided. assignments must be fewer in number, more comprehensive in scope and sufficiently structured to get the student on the right track but open enough to allow him to explore.

Probably the best and most current paper on the fantasies of flexible scheduling is by Backen.[18]

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[16]Donald Cramer. "Modular Schedule Asks Teachers: What Do You Want?", The National Schools, vol. LXXXII, (August, 1968) p. 28-29

[17]James C. Thompson. "Schools and Schedules," The Bulletin, vol. L, (May, 1970), p. 181-183.

[18]James J. Backen. "Flexible Scheduling: Facts, Fantasies, and Fads," English Journal, vol. LX, (March, 1971) p. 363-368, 372.

The most important original premise of flexible scheduling-- that its primary purpose is to individualize and personalize learning for students--is often forgotten. In too many schools and in too many minds, flexible scheduling has become a master rather than a servant.

Another of Backen's theories is that flexible schedules are, in reality, inflexible. Although they can rearrange traditional time segments and group sizes and space them over a weekly cycle, teachers, students and content are fixed in that repetitive cycle throughout the year, regardless of day-to-day needs.

Another fantasy is that students will be so inspired by the adoption of a flexible schedule that they will universally love the pursuit of learning. It takes people to inspire people, and, while a truly flexible schedule may provide teachers with a better opportunity to inspire (or motivate), inspiration does not ever occur automatically.

A common misconception about a flexible schedule is that a school can operate under the same set of assumptions about education and people that conventional schools use. Backen asks the question: Do teachers have the courage to teach in a situation which cannot guarantee that the students will always show up for class? To many, silence and immobility are the earmarks of a good class and, therefore, of a good teacher. More movement and noise are inherent in a flexible schedule, immediately causing a conflict of values within most teachers.

Another fantasy implies that a flexible schedule allows teachers

to teach the same content more effectively. This is precisely what happens in many schools of the new design. The growth of flexible scheduling in the 60's paralleled the great era of content rebuilding in the various disciplines. The new schedules became the framework into which new content could be poured. As a result, educational programs were developed to serve content, rather than the needs of children.

Another pitfall is the assumption that flexible scheduling automatically provides appropriate groupings of students.

How individualized is the large group lecture? Backen claims that the large group session is the most damnable of all the many creatures produced by flexible schedules.

How personalized is small group discussion if it is dominated by a teacher? Only in independent study can a student be caught at his leisure and treated as an individual human being.

It would be relatively simple to adjust to the needs of students in a flexible schedule if they fell into two groups--one group capable of being responsible for their own learning and one group equally incapable of being responsible. The fact is that students, as individuals, fall along a wide scale of responsibility which demands a corresponding scale of systems within the flexible schedule to cope with these varying capacities to function effectively in an open school situation. Without such systems, a flexible schedule can never fulfill its promise. In some flexible schools, opportunities for genuine student freedom are limited, and with-

out freedom there can be little sign of demonstrated responsibility.

Another fantasy, according to Backen, is that the flexible schedule makes the teacher's job easier. There is no way this can be true unless the schedule is not functioning effectively. The teacher's role may be more appropriate but never easier. Team teaching is agonizingly more difficult. The onslaught of students, freed by an open schedule to seek out teachers for individual help, can be mentally, emotionally and physically exhausting for the staff. The planning necessary to improve curriculum demands even more teacher time and energy. Routine record keeping is more difficult. It is obvious that any real attempt to personalize instruction and to deal with students as individuals will ultimately require more staff.

One of the fallacies which has grown up around flexible scheduling is that it is geared to the bright, the dull, the interested, and the disinterested. No kind of schedule, by itself, is geared to anything or anyone. Only creative academic programs, sensitive approaches to instruction, and the human desire to see children as individuals will motivate students.

The point is that a flexible schedule, by itself, is neither good nor bad. It must be viewed as a single element in the school design which can be used to facilitate individualized learning.

The following sixteen problems are impeding the progress of the flexible scheduling movement.[19]

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[19]The National Seminar On Modular Flexible Scheduling. "The Flexibly Scheduled School of 1980." Dayton, Ohio: Institute for Development of Educational Activities, 1971.

Competent consultant services and appropriate computer facilities are not generally available to all schools. In some areas schools have been promised services which were not forthcoming. No program, at present, which will work on a small computer exists.

There is an unfortunate tendency among school administrators to use flexible scheduling as an end in itself rather as a tool and schedules sometimes do not reflect the needs of a well-planned educational program.

The nation's pilot programs have solved their technical problems as have the most experienced schools. But schools moving into their first year of flexible scheduling are plagued by unique problems.

Computer-built flexible schedules are more expensive to build than are conventional period schedules. They are difficult to build and difficult to manage.

Once completed, computer-built flexible schedules are difficult to change. Flexibility is generally limited to that part of the day which is unscheduled for students and teachers.

School principals receive inadequate training in performing those administrative functions required in a flexibly scheduled school. Teacher training institutes have not recognized the need to develop programs for preparing teachers for their changing roles in flexibility.

In-service education programs are generally under-planned and under-financed.

Present methods for involving staff in educational change are too often ineffective. Some ways must be found in building self-renewal into the decision making process at the teaching team level.

No workable method of systematically evaluating the results of the cluster of innovative practices associated with flexible scheduling has yet been demonstrated. The critical public, and some critics within the profession, ask unanswerable questions regarding the outcomes of such innovative programs. Funds to pay for evaluations desired are typically not available.

Methods for obtaining community support for change are too often inadequate. Communities which are inadequately or erroneously informed about practices discontinue effective programs.

Pupils and teachers find it difficult to utilize their unscheduled time as profitably as is usually desired. The success of the schedule assumes a high degree of responsibility for their own actions by all concerned.

Provincial and state departments of education are typically not adequately staffed to provide leadership and support to schools desiring to become more flexible.

In flexibly scheduled schools, students often do not understand the objectives of the program or the potential of the innovations built into the program. Many students are reluctant to accept responsibility for their own learning because they have previously been conditioned to

assume a conforming role in a school.

Appropriate learning materials designed for student use during unscheduled time are as yet generally not available.

School personnel must become less institutional and more human in their relationship with learners. Education has not yet been meaningfully personalized for many learners.

New ways must be found to make curriculum relevant to uncommitted learners.

In summary, widespread adoption of flexible scheduling is currently being deterred by (1) lack of capable consultant help to secondary schools; (2) limited accessibility of computers to many schools; (3) the expense involved in implementing such a schedule; (4) a lack of trained administrative leaders; (5) the prevalence of rigid obsolete physical plants; and (6) widespread reluctance on the part of professional educators, community leaders, boards of education to adopt a comparatively new practice which affects an entire school program.

If one accepts flexible modular scheduling, the following assumptions must also be accepted: (1) all students do not have to be in class under supervision all day, every day; (2) learning does not only take place in the presence of a teacher who directs all learning activities; (3) all students do not have the same needs, skills, preparation, capacity, motivation, interests and objectives for being in school; (4) all classes do not have to be the same in terms of times per day, meetings

per week, teachers assigned and number of students present.

Of major importance is the analysis and evaluation of the effectiveness of flexible modular scheduling, especially in terms of benefits for the student.

In early attempts to use flexible modular scheduling, a common opinion on the question of evaluation was that such an endeavour was impossible. Yet, some kind of evaluation was done to move from the conventional to the modular system.

The literature is consistent in the following areas of evaluation. In general, there is agreement that positive statistical evidence to support arguments does not exist. The feasibility of a study to compare traditional with flexible schedules is highly questionable. The instruments that measure knowledge and subject matter goals will not measure the behavioural goals that modular programs emphasize.

Some educators measure the effectiveness of a modular program in terms of curriculum expansion. Claremont High School in California now offers 104 courses compared to 34 under conventional scheduling. The number of students taking electives is well above the national average.

Others prefer to measure the new design in terms of opportunities for teachers to experiment with the new modes of learning such as contracts and learning packages. Studies on students' content mastery showed some results better, some worse. For example, students at Marshall High School in Portland, scored higher on a standardized reading test

when compared to students at a conventional school.[20] The traditional subject matter can be measured and compared, but there are no statistical measures of the more elusive domains of behaviour.

In a study on the so-called problem students, it was found that, formerly, the teacher was to blame for the student's ills and that now the new program had gained this distinction.[21]

Surveys have established that students and teachers in the new designs all have positive reactions to the new design. The students claim they have more favourable attitudes toward school and the staff confirm these claims. In a follow-up of students in the Portland area in post high school studies (university and technical), it was found that students are prepared with better study habits having come from the flexible modular design.[22]

What kind of evaluation is best for the new design?

Manlove and Beggs claim it makes more sense to concentrate on describing what happens to individuals and to a school than to try to compare different schedules.[23] They believe educational research is changing. Instead of reducing multidimensional problems to unnatural simplicity researchers are focusing on parts of projects. It is often wise to look at broad areas.

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[20]Petrequin, op. cit., p. 170.

[21]Petrequin, op. cit., p. 172.

[22]Petrequin, op. cit., p. 171.

[23]Manlove and Beggs, op. cit., p. 91.

At the original pilot school in Portland, Dr. G. Petrequin, after seven years in the new design, states that validation of innovative educational programs and modular scheduling can best be done by professional judgment of the educational community. There are those who will not assess innovative schools by professional judgment but this is exactly how they evaluate their own traditional schools.

According to Manlove and Beggs, searching appraisals of what is or is not taking place in a school are fundamental to a professional school staff. They maintain the judgment of staff in each school is the best measure of any innovation and whether or not it is offering better learning and teaching opportunities. No evaluation is complete without looking at teachers' attitudes. Nor can the feelings and attitudes of students be ignored. The two educators point out that tests on attitudes toward flexible modular scheduling need to be designed.

II. REVIEW OF RELATED RESEARCH

Flexible modular scheduling pilot programs had begun as early as 1962 in California, Nevada and Oregon. Since that time, although, somewhat cautious, a considerable number of schools have begun to experiment with the new design. Many of these schools organize around the same common ideas and generally adopt the same basic teaching-learning modes (independent study, large group instruction, small group instruction, etc.). Each of the schools also has unique features to satisfy local needs.

Literature has generally kept up with the developments in various schools and numerous books and articles exist to confirm this. However, the writings have been focusing on the philosophy and implementation of flexible modular design.

The number of reports on the evaluation of the effectiveness of the new designs is minimal. There is little research pertaining directly to appraisal techniques.

One related study is the doctoral dissertation of Marvin Leroy Evans which was done at the University of Oregon in 1968. "A Comparative Study of Secondary School Independent Study Programs" deals with one aspect of flexible modular scheduling, namely independent study.

His method of evaluation was by questionnaire, observation and interview. He visited nine selected schools for a period of 3 days each. During that time he worked with 45 students from each grade and sampled 60% of the staff, plus the administrators and the librarian. Comparisons were made between the characteristics of successful and less successful independent study programs. It was found that successful independent study programs (1) had strong leadership from teachers, (2) provided for individual differences, (3) allowed for deviation from standard programs, (4) used aides and many resources, (5) had objectives which were clearly outlined, (6) provided teachers with free time to work with students, (7) allowed students to help other students, (8) restricted movement to independent study areas to passing time,*(9) required students to stay on cam-

* Passing time is the 3-5 minute interval allowed for changing classes.

pus during school hours, (10) had additional leadership from principal and teacher committees, and (11) experimented with a wide variety of motivational techniques.[24]

In the Ohme study, a modified daily schedule was examined in terms of background and results.[25] The modification consisted of reducing class meetings from five to four times per week for students and reducing teaching loads from 25 to 20 periods per week for teachers.

In the problem answers were sought for the following questions. Did reduced work loads for teachers result in improved services for teachers? What were the advantages and disadvantages of the schedule to students? How did parents react? What were the effects on administration? What was the relationship between class time and student achievement?

The method of the study included investigator-designed questionnaires for teachers, parents, students and administrators.

Some of the findings follow. There were few interruptions of class time. Teachers counseled and tutored more students outside of the class schedule, planned more extensively and devoted more time to professional growth. There were significant increases in partial and full day truancies. Discipline referrals increased by 51%. There was less in-

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[24]Marvin Leroy Evans. "A Comparative Study of Secondary School Independent Study Programs." University of Oregon, 1968.

[25]Herman Ohme. "Evaluation of a Modified Daily Schedule at Culver City High School." University of California, 1968.

terest in school clubs and activities. Achievement in chemistry and foreign languages which remained on the traditional schedule was higher than on the new modified schedule.

It was concluded that extra free time enables teachers to improve instruction, planning and preparation, and to meet professional obligations. Students enjoy school more and their attitudes toward school improve when variety and free time are available. This accompanied by an increase in discipline and attendance problems.

In the overall analysis it was recommended that the modified schedule be retained.

The study by Duncan focused upon the expectations of teachers regarding flexible scheduling in three secondary schools.[26] Teachers having no experience under such a system were asked their expectations. The degree to which expectations had been met after one semester's experience was measured by interviews.

The investigator developed an open ended questionnaire. The items on the instruments were largely based upon direct or implied statements regarding flexible scheduling which were found in professional literature. Teachers responded to the same items before and after experience. Only the tense was changed. Some of the major findings were that (1) the

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[26]John R. Duncan. "A Study of Teachers' Expectations of Flexible Scheduling in Three Selected Secondary Schools." University of Indiana, 1967.

teaching-learning process was more rewarding under flexible scheduling; (2) there was an increased professionalism in the teacher's role; (3) there was less lecturing; (4) teachers were busier with individual contacts with students; (5) teaching was more enjoyable; (6) classroom management was easier; (7) faculty interpersonal relations improved; (8) student achievement improved.

It was concluded that (1) the teacher's role changes with an emphasis on the teacher as a director of learning; (2) flexible modular scheduling may be one means of providing the educator with a method of meeting individual needs of students; (3) students will assume more responsibility if they are provided with the opportunity; (4) the scheduling places exhaustive demands on teachers' time; (5) other schools may experience the same degree of teacher acceptance of the scheduling.

Current curriculum changes, staff utilization patterns, and instructional techniques require improved methods for class schedules. The above statement is the basis for a study by Vogt in which a model is developed for such a schedule in a K to 12 school.[27] The main finding of the study is that the model must be continuously improved. The main recommendation resulting from this research asks for greater training of administrators of such schools.

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[27]Robert Lee Vogt. "A Computerized Modular Schedule Model for the Florida State University School." The Florida State University, 1967.

A very interesting study was carried out by Sudyk at Valley High School in Las Vegas.[28] His main concern was in determining how one could influence students from spending excessive numbers of unscheduled periods in the luncheteria. A booklet was developed outlining successful independent study habits. This was presented as a model to some of the students. Later, the same students received a modeling reinforcement in the form of a letter of commendation. Students with this treatment soon spent less time in the luncheteria and went on to more productive tasks. Brighter students were quickest to change their habits as were students in the lower grades.

Haugo carried out research in a Minneapolis suburban high school in which he compared the modular plan with the former traditional one.[29] On a questionnaire of 27 items, students were asked if they perceived more, about the same, or less opportunities under the modular plan to accomplish various objectives of the teaching-learning process. On 17 of these items, more students felt the opportunities were significantly greater than the number who felt the opposite.

In a companion questionnaire to teachers, the majority perceived more opportunities on 13 of 20 items.

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[28] James Edward Sudyk. "The Effect of Modeling and Model-Reinforcement on Students' Use of Unscheduled Time." Stanford University, California, 1967.

[29] John Edward Haugo. "A Comparative Analysis of Two Plans of High School Organization For Instruction: Modular Versus Traditional." University of Minnesota, 1968.

About 85% of students and 70% of teachers preferred the modular plan. High achievers had greater regard for the plan than low achievers. Younger teachers and female teachers expressed significantly higher preference for the modular plan.

In Stafford's study mobility as a variable did not have a statistically significant effect on interpersonal orientation.[30] There was no significant difference between mobile military and non military students in interpersonal orientation, social integration or values, and none between mobile and permanent students.

Each of the aforementioned research papers relates to one or more aspects of the investigative study, and the findings of these related studies form the basis of the setting of this thesis.

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[30]Ronald Leon Stafford. "Mobility and Its Effect Upon Student Values, Social Integration, and Interpersonal Orientation." University of Oklahoma, 1968.

CHAPTER III

RESEARCH PROCEDURES

I. SOURCES OF DATA

The entire populations, both staff and students, of Red River High School at Grand Forks and Vincent Massey Collegiate in Fort Garry were surveyed by means of questionnaires. When the surveys were conducted, several members of the staff and many students happened to be absent. No attempt was made in the form of a follow-up to have people who had missed the survey complete the questionnaire at a later date since there was no way of telling who had not taken the questionnaire because the respondents were not required to identify themselves on the score sheets, and since over 80% of the staff and over 70% of the students had initially taken part in the survey, a sufficiently large sample had been obtained.

II. PROCEDURES FOR COLLECTING DATA

Two instruments were designed by the investigator to survey the staff and students at two schools.

Vincent Massey Collegiate was selected since it was the school at which the writer was employed during the course of this study and since there was a definite need at the local level for some attempt in evaluating various programs in the school. The school, being relatively new and having participated in experimental programs in educational innovation,

made it ideal for this type of survey.

Red River High School was suggested as an additional source of data by the thesis chairman. The staff and administration of this school were also experimenting in many educational fields.

Both schools had large stable staffs willing to cooperate in research programs.

Suitable survey instruments were not available commercially. Because of the lack of commercial material and because the environments of both schools were known to the writer, it was decided to design the following two instruments: (1) Staff Attitude Toward Flexible Modular Scheduling Innovations and (2) Student Attitude Toward Flexible Modular Scheduling Innovations.

In order that the respondents knew in what context they were expressing their attitudes, the staff questionnaire contained a framework of reference which was followed by a set of examples and the statements, "In your opinion, please indicate how substantial the GAINS or LOSSES are in the following pupil behaviours which result from students being in a flexibly modular scheduled school. If you cannot respond, do not answer the question."[31]

Spaces were provided in which one could mark a degree of gain or loss with respect to nine common pupil behaviours.

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[31] Appendix A, p. 72

The student questionnaire was a two stage procedure. First, over 150 students out of 1000 at Vincent Massey Collegiate were asked to respond to five questions.[32] From the responses to these questions, thirty-one student statements were selected. The selection was based on how well the student statements related to the nine pupil behaviours in the staff questionnaire and to direct or implied statements regarding flexible scheduling found in professional literature.

These thirty-one statements made up the student questionnaire entitled Student Attitude Toward Flexible Modular Scheduling Innovations.[33] It contained an introduction, the purpose of the survey, examples and spaces for responses in which a student indicated agreement or disagreement with the statement.

To ensure that staff and student questionnaires were both following the same theme, an effort was made to relate the two in the introductions and in the test items. The following is a breakdown of the items on the questionnaires and the closest possible matching:

Items on Staff Questionnaire	Related Items on Student Questionnaire
1. Interest	1, 10
2. Motivation Level	2, 11, 19
3. Adjustment to Learning Situation	3, 12

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[32] Appendix B, p.75

[33] Appendix C, p.78

4.	General Industry & Application to Task	4, 13, 20, 26
5.	Social Adjustment	5, 14, 21, 27, 31
6.	Creativity	6, 15, 22, 28
7.	Critical Thinking	7, 16, 23, 29
8.	Independent Inquiry	8, 17, 24, 30
9.	Academic Achievement	9, 18, 25

III. TREATMENT OF DATA

Data from the two schools was kept separately in order that it would be more useful and meaningful.

Staff Questionnaire. Data from the staff questionnaire was read and treated manually since the number of replies totalled 104. The number of responses for each pupil behaviour category was tallied and tabulated. Using these tabulations, percentages were calculated.

For example, the distribution of responses from 55 staff members at Vincent Massey Collegiate for item number one, Interest, was as follows:

		No. of Responses	Per cent
GAINS	ENTIRELY	6	10.91
	PARTIALLY	46	83.63
NO LOSS, NO GAIN	NOT AT ALL	3	5.46

L O S S E S	PARTIALLY	0	0.00
	ENTIRELY	0	0.00

Therefore, 10.91% of the respondents, using professional judgment, thought that substantial gains in Interest on the part of a student could be attributed entirely to flexible modular scheduling. Furthermore, 94.54% (10.91% + 83.63%) indicated support for gains while 5.46% of the staff are neutral. None indicated losses in this area of pupil behaviour.

The same analysis was carried out for the remainder of the nine items on the staff questionnaire.

To measure overall gains or losses the following point values were assigned to each of the 5 possible responses.

G A I N S	ENTIRELY	+2
	PARTIALLY	+1
NO LOSS, NO GAIN		0
L O S S E S	PARTIALLY	-1
	ENTIRELY	-2

Net total gains or losses were defined as

NET TOTAL = (SUM OF GAINS POINTS) + (SUM OF LOSSES POINTS).

Consider the following responses by a staff member from Vincent Massey Collegiate to the nine pupil behaviours surveyed.

	GAINS			LOSSES	
	E	P	N	P	E
1.		X			
2.		X			
3.		X			
4.			X		
5.		X			
6.			X		
7.			X		
8.		X			
9.		X			

0(2) + 6(1) + 3(0) + 0(-1) + 0(-2) = NET TOTAL LOSS OR GAIN

↑ Number of responses under "entirely"

Point value of response

0 + 6 + 0 + 0 + 0 = +6 in favour of gains

For the purpose of this paper, any positive value was considered significant.

The above method provided a measure of significant gains or losses for the nine behaviours collectively.

To determine whether or not there were significant gains or losses in any particular one of the nine behaviours, the same method was applied with the exception that this time the responses of the entire staff were considered.

Using the example above for the item "Interest", the following calculation resulted.

Interest		No. of respondents	Point value of response
G A I N S	ENTIRELY	6(+2) =	12
	PARTIALLY	46(+1) =	46
NO LOSS, NO GAIN	NOT AT ALL	3(0) =	0
L O S S E S	PARTIALLY	0(-1) =	0
	ENTIRELY	0(-2) =	0
	TOTALS	55	+58

AGAIN, for the purpose of this paper positive values were considered significant in favour of gains, and negative values in favour of losses.

The results of the staff questionnaire were tabulated in order to determine whether or not there are any substantial gains or losses in pupil behaviour that can be directly attributed to flexible modular

scheduling.

Student questionnaire. The number of respondents taking part in the student survey was 1,540. This data was machine scored using a form called IBM 1230 Document NO. 511. The item analysis was done by a program at the University of Manitoba Data Processing Centre.

The number and percentage of responses for each of the five categories for each item were recorded to ascertain the number of students who show strong agreement or disagreement with statements based upon direct or implied statements regarding flexible scheduling in current professional literature.

An item analysis was repeated under a breakdown by grade in order to determine whether a difference in attitudes of senior and junior students existed.

A special breakdown of student population at Red River High School was carried out in which Grand Forks student responses were separated from Grand Forks Air Base student responses to determine whether differences in attitudes existed between stationary and transient students.

CHAPTER IV

SURVEY RESULTS

Excellent cooperation was received from both schools in the conducting of the two surveys. The following array compares the number of returns with the total number possible for both tests.

School	Survey	Number Possible	Number of Returns	% Return
Vincent Massey Collegiate	Staff Attitude Toward Flexible Modular Scheduling Innovations	60	55	91.67
Red River High School		60	49	81.67
Vincent Massey Collegiate	Student Attitude Toward Flexible Modular Scheduling Innovations	1000	717	71.70
Red River High School		1100	823	74.82

I. STAFF QUESTIONNAIRE RESULTS

As previously mentioned, the results from the two schools were kept separate in order that information from them would more readily meet local needs as well as provide general information for other schools.

Table I summarizes the number of responses for each pupil behaviour category by the staff at Vincent Massey Collegiate. The percentage of the total number responding is given in brackets.

TABLE I

SUMMARY OF RESPONSES TO STAFF QUESTIONNAIRE AT VINCENT MASSEY COLLEGIATE

	Gains			Losses		
Pupil Behaviour	E	P	N	P	E	NR
Interest	6 (10.91)*	46 (83.63)	3 (5.46)	0 (0.00)	0 (0.00)	0 (0.00)
Motivation Level	2 (3.64)	48 (87.27)	4 (7.27)	1 (1.82)	0 (0.00)	0 (0.00)
Adjustment to Learning Situation	1 (1.82)	35 (63.64)	9 (16.36)	3 (5.46)	0 (0.00)	7 (12.73)
General Industry and Application to Task	1 (1.82)	25 (45.45)	21 (38.18)	5 (9.09)	0 (0.00)	3 (5.46)
Social Adjustment	7 (12.73)	28 (50.91)	10 (18.18)	7 (12.73)	0 (0.00)	3 (5.46)
Creativity	5 (9.09)	31 (56.36)	15 (27.27)	1 (1.82)	0 (0.00)	3 (5.46)
Critical Thinking	3 (5.46)	25 (45.45)	18 (32.73)	2 (3.64)	0 (0.00)	5 (9.09)
Independent Inquiry	13 (23.64)	33 (60.00)	5 (9.09)	0 (0.00)	0 (0.00)	4 (7.27)
Academic Achievement	0 (0.00)	44 (80.00)	8 (14.55)	0 (0.00)	0 (0.00)	3 (5.45)

*Number in brackets is per cent of total.

To facilitate discussion of data, the "partially" and "entirely" percentages were combined in both gains and losses.

Over 80% of the staff at Vincent Massey Collegiate indicated gains in Interest, Motivation Level, Independent Inquiry, and Academic Achievement. Greatest losses were indicated for General Industry and Application to Task and Social Adjustment, which were 9.09% and 12.73% respectively. Critical Thinking and General Industry and Application to Task were the most difficult items to express an opinion upon with over 30% neutrality indicated.

Table II is a summary of staff opinions at Red River High School. As in the discussion for Vincent Massey Collegiate, the "entirely" and "partially" percentages were combined. Gains were recorded by more than 73% of the staff in Independent Inquiry, Interest, Social Adjustment, and Creativity. Losses were indicated by 20 to 26% of the staff in Motivation Level, Adjustment to Learning Situation and General Industry and Application to Task. Losses in Academic Achievement and Critical Thinking were expressed by 16% of the staff. Twenty per cent of the staff remained neutral on General Industry and Application to Task and twenty-four per cent on Academic Achievement.

The summary of net total gains or losses for Vincent Massey Collegiate can be found in Table III. "Net Total Gains or Losses" was defined as total gains points plus total losses points. "Entirely" responses re-

TABLE II

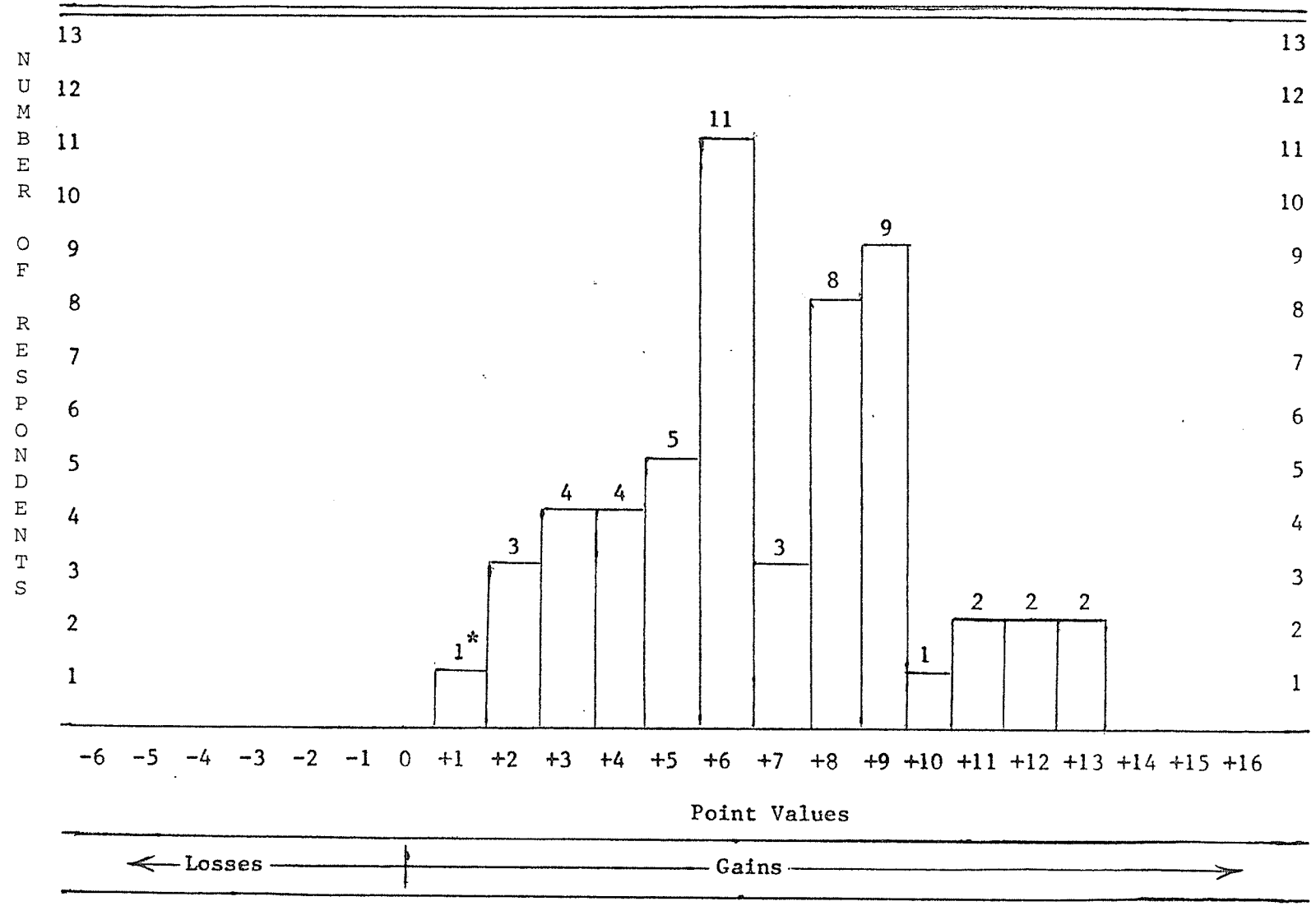
SUMMARY OF RESPONSES TO STAFF QUESTIONNAIRE AT RED RIVER HIGH SCHOOL

	Gains			Losses		
Pupil Behaviour	E	P	N	P	E	NR
Interest	5 (10.20)*	33 (67.35)	6 (12.24)	5 (10.20)	0 (0.00)	0 (0.00)
Motivation Level	4 (8.16)	25 (51.02)	6 (12.24)	13 (26.53)	0 (0.00)	1 (2.04)
Adjustment to Learning Situation	4 (8.16)	27 (55.10)	6 (12.24)	10 (20.41)	0 (0.00)	2 (4.08)
General Industry and Application to Task	2 (4.08)	25 (51.02)	10 (20.41)	11 (22.45)	0 (0.00)	1 (2.04)
Social Adjustment	7 (14.29)	30 (61.23)	6 (12.24)	6 (12.24)	0 (0.00)	0 (0.00)
Creativity	11 (22.45)	25 (51.02)	8 (16.33)	5 (10.20)	0 (0.00)	0 (0.00)
Critical Thinking	5 (10.20)	28 (57.14)	8 (16.33)	8 (16.33)	0 (0.00)	0 (0.00)
Independent Inquiry	14 (28.60)	28 (57.14)	5 (10.20)	2 (4.08)	0 (0.00)	0 (0.00)
Academic Achievement	1 (2.04)	28 (57.14)	12 (24.49)	8 (16.33)	0 (0.00)	0 (0.00)

*Number in brackets is per cent of total.

TABLE III

SUMMARY OF NET TOTAL GAINS OR LOSSES IN PUPIL BEHAVIOURS AT VINCENT MASSEY COLLEGIATE



*The number above each bar on graph is number of respondents for that point value.

ceived a weight of two points, "Partially" one point, and "Neutral" a value of zero points.

The distribution of points fell entirely under gains with the lowest being plus one and the greatest plus thirteen. Most of the staff indicated gains of plus six to plus nine. Because the peak of the curve is toward the upper end of the scale, with the longest slope downward toward the lower end of the scale, the curve is negatively skewed or skewed to the left.[34] Therefore, the mode will generally exceed the median which, in turn, may be expected to be larger than the mean.[35]

Table IV summarizes the results of net total gains or losses for Red River High School. All but eight of the Red River High School staff indicated positive gains. The greatest loss was minus six and the greatest gain was plus fifteen. Gains of plus seven to plus eleven were indicated by most staff members.

Table V is a summary of gains or losses in individual behaviours using the aforementioned point system.

At Vincent Massey Collegiate, the staff indicated greatest gains in Independent Inquiry, Interest, Motivation Level, and Academic Achievement. This is exactly what was found using the percentage method in Table

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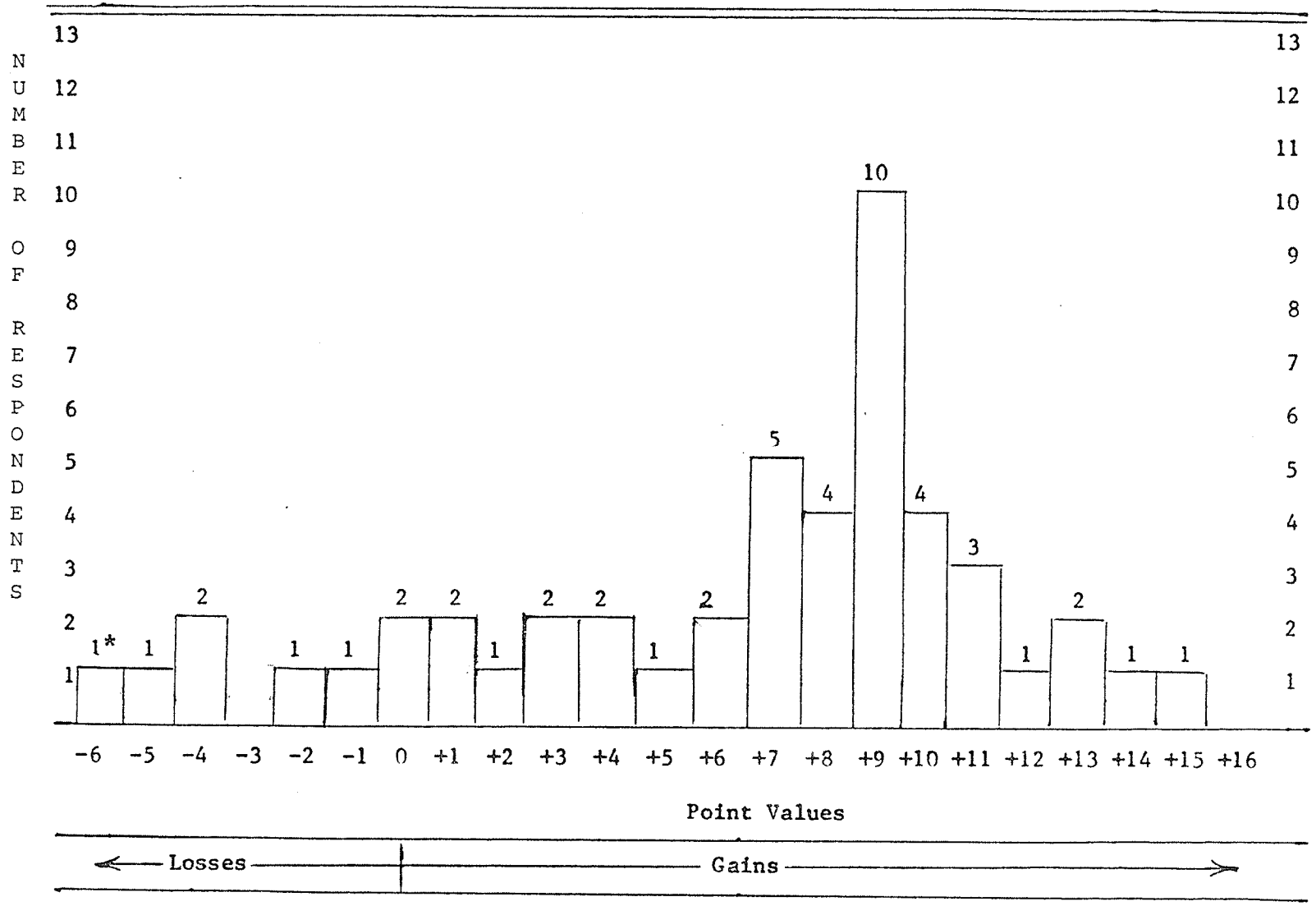
[34]C.C. Ross. Measurement in Today's Schools. Englewood Cliffs, N.J.: Prentice-Hall, 1954. p. 262

[35]John E. Freund. Modern Elementary Statistics. Englewood Cliffs, N.J.: Prentice-Hall, 1952. p. 98.

TABLE IV

SUMMARY OF NET TOTAL GAINS OR LOSSES IN PUPIL BEHAVIOURS AT RED RIVER HIGH SCHOOL



*The number above each bar on graph is number of respondents for that point value.

TABLE V

SUMMARY OF GAINS OR LOSSES ON INDIVIDUAL BEHAVIOURS
AT VINCENT MASSEY COLLEGIATE

Pupil Behaviour	E	P	N	P	E	Total
Interest	+12	+46	0	0	0	+58
Motivation Level	+ 4	+48	0	-1	0	+51
Adjustment to Learning Situation	+ 2	+35	0	-3	0	+34
General Industry and Application to Task	+ 2	+25	0	-5	0	+22
Social Adjustment	+14	+28	0	-7	0	+35
Creativity	+10	+31	0	-1	0	+40
Critical Thinking	+ 6	+25	0	-2	0	+29
Independent Inquiry	+26	+33	0	0	0	+59
Academic Achievement	0	+44	0	0	0	+44

I on page 45. The point method, therefore, has merit of its own. It makes for simpler calculations.

The opinions of the Red River High School staff on individual behaviours are summarized in Table VI. The greatest gains were recorded in Independent Inquiry, Creativity, Interest and Social Adjustment. These were also the four determined using the percentage method in Table II on page 47. Whether this point method will work for other surveys remains to be determined.

II. STUDENT QUESTIONNAIRE RESULTS

The item analysis by computer of the student questionnaire for the two schools was extensive. It was, therefore, placed in Appendix D, on page 83, for reference. The student questionnaire, found in Appendix C on page 78, and the results are easier to read and to interpret when both questions and output (responses) are together.

The discussion which follows deals with the more significant features of the output.

In the data on all grades combined, the "strongly agree" and "slightly agree" totals were combined as agreement. The "slightly disagree" and "strongly disagree" totals were combined as disagreement. It was more practical and efficient to compare two numbers instead of four.

Although it was not the purpose of this thesis to compare Red River High School results with those of Vincent Massey Collegiate, an interesting

TABLE VI

SUMMARY OF GAINS OR LOSSES ON INDIVIDUAL BEHAVIOURS
AT RED RIVER HIGH SCHOOL

Pupil Behaviour	E	P	N	P	E	Total
Interest	+10	+33	0	- 5	0	+38
Motivation Level	+ 8	+25	0	-13	0	+20
Adjustment to Learning Situation	+ 8	+27	0	-10	0	+25
General Industry and Application to Task	+ 4	+25	0	-11	0	+18
Social Adjustment	+14	+30	0	- 6	0	+38
Creativity	+22	+25	0	- 5	0	+42
Critical Thinking	+10	+28	0	- 8	0	+30
Independent Inquiry	+28	+28	0	- 2	0	+54
Academic Achievement	+ 2	+28	0	- 8	0	+22

comparison resulted when the "strongly" and "slightly" categories were combined in the schools' respective data.

For example, for statement No. 31 which reads, "I have more opportunity to see teachers for assistance", the following percentages occurred:

	Agreement			Disagreement	
	A	B	C	D	E
Red River High School	35.96	24.54		9.47	9.84
	60.50%			19.31%	
Vincent Massey Collegiate	25.10	32.35		10.73	9.48
	57.45%			20.21%	

Note that the combined percentages differ very little even though the surveys were carried out in two unique schools in different geographical areas.

The closeness of the combined percentages was found in all but four of the thirty-one items on the student survey. The exceptions were items 3, 7, 16, and 18.

Item 3, "I find it easier to study this year", had 54% agreement at Red River High School and 35% agreement at Vincent Massey Collegiate. The higher agreement at Red River High School may be related to the use of contract systems in the school.

For item 7, "I engage in more discussions in the small group sessions",

the percentages for agreement were approximately 63% and 33% for Red River High School and Vincent Massey Collegiate respectively. Red River High School schedules many more small group sessions and these could account for the difference.

There does not seem to be a ready explanation for item 16, "I understand my subject matter better this term", which was 61%-46% with the higher percentage at Red River High School.

"I will get more credits this year" had 43% agreement by the students at Red River High School but only 29% by those at Vincent Massey Collegiate. The reason for the higher percentage at Red River High School is probably the larger number of half courses offered at that school.

The following were high agreement statements. Over 60% of the students at both schools responded to these statements with strong support for flexible modular scheduling. The related pupil behaviour is included in brackets.

--I am more interested in school because I can select courses I like. (Interest)

--I am more highly motivated this year by being able to take the courses I like. (Motivation Level)

--I decide, on my own, what subject to study. (Motivation Level)

--I am more responsible for my studies with fewer scheduled classes. (General Industry and Application to Task)

--I study better after taking a break in the informal study area. (Social Adjustment)

--I get more homework done at school. (General Industry & Application to Task)

--I meet more students moving from class to class. (Social Adjustment)

--I don't have to follow the group. (Creativity)

--I am able to discuss some of my school work with other students. (Social Adjustment)

--I'm beginning to think for myself. (Critical Thinking)

Medium agreement statements were defined as those on which 40 to 59% of the students indicated slight or strong agreement.

--I find it easier to study this year. (Adjustment to Learning Situation)

--I can make up a credit I was short of last year. (General Industry & Application to Task)

--I feel the inter-room spirit for sports is not the same. (Social Adjustment)

--I have more time to explore the world of information. (Creativity)

--I engage in more discussions in the small group sessions. (Critical Thinking)

--I am getting higher grades in my subjects. (Academic Achievement)

--I am interested in most of my subjects instead of one or two. (Interest)

--I use my free time in more profitable ways. (Adjustment to Learning Situation)

--I am able to take part in extra-curricular activities during the regular school day. (Creativity)

--I understand my subject matter better this term. (Critical Thinking)

--I am doing more independent inquiry in the resource centre(s). (Independent Inquiry)

--I read more books than I usually do. (Independent Inquiry)

--I can choose my own projects. (Creativity)

--I have been exploring new ideas in my free time. (Independent Inquiry)

--I have more opportunity to see teachers for assistance. (Social Adjustment)

--I waste most of my unscheduled time. (Independent Inquiry) Note: Agreement here totaled 35% but disagreement, indicating support for the scheduling, was over 45%.

--I am getting lower marks than previous years. (Academic Achievement) Note: Agreement was only 31% but disagreement, or support for the scheduling, was 45%.

Low agreement was used to describe those statements to which less than 40% of the students agree.

--I will get more credits this year. (Academic Achievement)

--I find school very boring. (Motivation Level) Note: 38% disagreed and 38% agreed.

--I do not get behind in my studies the way I used to. (General Industry & Application to Task)

Between grades, the responses were very consistent. That is, amongst the grade 10's, 11's, and 12's the percentages of agreement or disagreement did not vary significantly. The grade 10 and 11 responses were very much the same, while the grade 12's expressed agreement to a lesser degree.

The following are a few exceptions at Vincent Massey Collegiate. In comparing grade 10 and 11 responses, two statements varied in percentages for agreement. To the statement, "I can make up a credit I was short of last year", 42% of the elevens agreed as compared to 26% of the tens. This lower percentage of agreement is due to the fact that the tens took their courses in another school during the previous year with the exception of

Industrial Arts and technical courses. Therefore, they would not have had the opportunity to make up credits in any subjects other than Industrial Arts and technical courses. The tens were also less in agreement with the statement, "I feel the inter-room spirit is not the same". Their responses totaled 50% for agreement, while the elevens totaled 70%. The assumption here is that the elevens were more aware of the situation because they were in their second year at the school.

Because the grade ten and eleven responses were very much the same, it was decided to compare only the responses of the tens to those of the twelves.

Here, four items had agreement percentages which varied unusually. For the statement, "I am able to take part in extra-curricular activities during the regular school day", 51% of the tens agreed in comparison to 34% of the twelves. These were also the percentages for statement, "I understand my subject matter better this term". Probably the main reason for the difference is the more difficult and heavier program carried by the twelves. The twelves recorded lower agreement with the statement, "I will get more credits this year", because, although they have a heavier program, they take fewer credits than either the tens or the elevens. On only one statement did the twelves record greater agreement than either the tens or the elevens. That statement was "I find school very boring".

At Red River High School, the tens and elevens had similar responses while the twelves recorded somewhat lower agreements.

Comparing the responses of the grade tens with the grade elevens revealed the following differences.

For the statement, "I can make up a credit I was short of last year", there was 57% agreement by the elevens and 48% by the tens. There would be fewer opportunities for the tens to make up a credit since they came up from another school.

The elevens had a 69% agreement recorded for the statement, "I engage in more discussions in the small group sessions", compared to 57% for the tens. At Red River High School, the elevens have more small group sessions scheduled. This fact would account for their higher percentage.

Items nine and twenty-five are opposite statements. Nine states "I am getting higher grades in my subjects" and twenty-five states "I am getting lower marks than previous years".

The tens had 42% agreement on item nine and 29% on statement twenty-five. Among the elevens there was 53% agreement on statement nine, 11% higher than the tens, and 20% agreement on statement twenty-five, 9% lower. The combined agreement of one item and disagreement of the other totaled 71% and 73% for grades ten and eleven respectively. This is one example of good reliability of the test items.

A special item analysis comparing two groups attending Red River High School, one from Grand Forks City and one from Grand Forks Air Base, was carried out at the request of the Red River High School Administration. Despite the high mobility of Air Base students and the stability of the City

student population, there was no signigicant difference in their responses. Small differences ranging from 4 to 8 per cent were found in only five of the thirty-one survey statements (numbers 6, 8, 9, 15, and 16).

CHAPTER V

SUMMARY AND CONCLUSIONS

I. SUMMARY

The staff and students at two large high schools, Vincent Massey Collegiate from the Fort Garry School Division in Winnipeg, Manitoba and Red River High School in Grand Forks, North Dakota, provided much information about their attitudes and opinions on flexible modular scheduling innovations.

To carry out the survey, two instruments were designed. Although there is no scientific research for the validity or reliability of the measuring devices, they performed well by gathering large amounts of descriptive data efficiently with a minimum of interruption in the school routine.

In reviewing the related literature and research, the development of flexible modular scheduling innovations and their relationship to the computer have been documented. The literature and the two schools surveyed demonstrate that forward strides are being made by educators in the personalizing and individualizing of the instructional program for each student.

For example, educational innovators during the last ten years have (1) solved the technical problems which previously limited the

the benefits of computer-built flexible schedules to a few experimental schools; (2) developed and implemented school-wide reorganization plans designed to shorten communication lines and to make more efficient use of complementary teacher talents; (3) developed and implemented the concepts of team teaching, large and small group instruction, independent study, and continuous progress; (4) further refined the non-graded concept and implemented it at the secondary school level; (5) developed, on a limited scale, plans for organizing self-instructional multi-media units of instruction suitable for individualized learning; (6) invented and developed the concept of differentiated staff which shows promise of increasing staff motivation for improved performance and efficiency; (7) learned how to build new buildings and to modify old ones to make facilities appropriate for flexible programs; (8) stimulated, on the part of educational and lay communities, an awareness of the critical need for reorganization of schools.

Even though general measures show increasing acceptance of flexible scheduling by schools, much needs to be done before the flexible schedule and the kind of educational program it is designed to accommodate can be adopted generally throughout the country. Specifically, scheduling programs for small computers are not available. Some schedules have not reflected the needs of a well-planned educational program. Computer-built flexible schedules are expensive and difficult to manage. Flexibility is limited in most schools to that part of the day which is

unscheduled for teachers and students. School administrators receive inadequate training in performing tasks required in a flexibly-scheduled school. Teacher-training institutions have not recognized the need to develop programs for preparing teachers for changing and more demanding roles in flexibility. Inservice education programs are often under-planned and under-financed. Systematic evaluative methods of the results of the clusters of innovative practices of flexible scheduling have not yet been demonstrated.

The staff at both schools is highly in favour of flexible modular scheduling. As a result of the scheduling innovations they perceive gains in all of the pupil behaviours outlined in the thesis.

The faculty at Vincent Massey Collegiate indicated greatest gains in Independent Inquiry, Interest, Motivation Level, and Academic Achievement. The gains are less pronounced at Red River High School where Independent Inquiry, Creativity, Interest and Social Adjustment were reported to have the greatest gains.

The students, expressing agreement or disagreement with statements which they themselves had made, indicated greatest benefits (highest agreements) in Interest, Motivation Level, Social Adjustment, and General Industry and Application to Task.

Looking at grade levels, the tens and elevens expressed virtually the same amount of agreement or disagreement. Generally, grade twelves indicated somewhat lower agreements.

The responses of the students for agreement or disagreement in the two schools were very similar.

In a small sub-study, the attitudes of Grand Forks City students and Grand Forks Air Base students were almost identical.

Flexible modular scheduling and the innovations which accompany it have their places in today's schools. Although many problems still exist, some general measures indicate increasing acceptance of the practice.

Many Core Committee proposals in Manitoba may not be implemented unless the new design, based on this scheduling, is adopted.

The opinions and attitudes of staff are important in the educational process. The excellent cooperation received in collecting data for this study with experimental measuring devices is some evidence that teachers and learners are ready and willing to try to make schools better with assistance in educational research.

Broad areas in the school system can be viewed. Although there is a place in educational research for simple scientific study, the multi-dimensional problem cannot be ignored. Clues that may assist in providing opportunities for the individual will be found in studying the needs of large groups.

II. CONCLUSIONS

Conclusions were drawn from analysis of data and from descriptive statistics.

1. The descriptive data revealed that staff members at Red River High School and Vincent Massey Collegiate perceived gains in all of the pupil behaviours. Since the responses were made within the flexible scheduling framework of reference, it could be concluded that a relationship exists between gains in pupil behaviour and flexible scheduling.

2. Students indicated a high degree of agreement with the related pupil behaviour statements. From their responses, one could conclude that the students perceive a relationship between gains in pupil behaviour and flexible scheduling.

3. The staff at Vincent Massey Collegiate reported greatest gains in Interest, Motivation Level, Independent Inquiry and Academic Achievement. At Red River High School the staff reported greatest gains in Independent Inquiry, Creativity, Interest and Social Adjustment. Although the staff of both schools agreed that there were gains in pupil behaviours as a result of flexible scheduling, they did not agree as to where the greatest gains had occurred.

4. At both schools students perceived that the greatest benefits derived from flexible modular scheduling were Interest, Motivation Level, Social Adjustment, and General Industry and Application to Task. These results suggested that flexible scheduling affects all students in a similar manner.

5. Grade tens and elevens expressed the same amount of agreement or disagreement with the pupil behaviours and their relationship to flexible modular scheduling. Grade twelves expressed somewhat lower agreements.

A subjective conclusion would be that senior students could not fully realize the maximum benefits from flexible scheduling because this system had been introduced just one year previously. On the other hand, students now in grades ten and eleven had the advantage of a flexibly scheduled program from their first introduction to high school.

III. IMPLICATIONS FOR FURTHER RESEARCH

Further studies should be carried out on the two instruments designed in an attempt to establish and to document their reliability and validity.

Methods should be developed for building flexible schedules without the use of a computer for large (1000-2000) high schools.

Mini-courses, rolling seminars, student forums, optional attendance, large and small groups, and video-taping should be experimented with.

Projects should be launched to provide information regarding the cost of the specific innovative practices for, in the final analysis, implementation of innovation always depends upon cost.

Educators should initiate projects to develop instructional units and techniques to improve the students' ability to become progressively more self directive as expected in instructional time periods and as expected in continuous progress programs.

Criteria other than time-in-class which would be acceptable to state and provincial departments of education and accrediting associa-

tions as a basis for awarding course credits should be developed.

A framework of evaluative procedures that will produce data relevant to imposed external criteria and data relevant to the declared intent of the program should also be developed.

The use of school-initiated evaluative criteria as one method of linking evaluation to a school's unique objectives might be explored.

If one accepts the philosophy behind flexible modular scheduling, what changes in building design are required to incorporate this philosophy?

These implications are some of the new problems which must be faced as the old ones are solved.

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A P P E N D I X

APPENDIX A

STAFF ATTITUDE TOWARD FLEXIBLE MODULAR SCHEDULING INNOVATIONS

For the second consecutive year our school is using a form of computerized flexible modular scheduling in an attempt to personalize instruction and to adapt the curriculum to the student. The following are some of the immediate implications of adopting such a system:

1. Every student is on an individual timetable.
2. Every student can select courses to suit his own needs.
3. Students can schedule in any one or in a combination or the Regular, Advanced, Honours, or Business Education programs.
4. Students can schedule in several grades. They may be making up credits they lack or taking advanced credits.
5. During unscheduled time students can use the Library Resource Centre (LRC), use the independent study area (ISA), consult a teacher, attend extra classes for remedial or enrichment work, plan extra-curricular activities, rehearse for a play, view films, etc.
6. Certain students may arrive late or leave early, especially if on a partial program.
7. Students can act as teacher assistants, e.g., lab assistants, office clerks, tutors, coaches.

I am interested in determining whether our new system has improved educational opportunities for our students.

Read the following question carefully. With it in mind, respond to each of the nine areas classified as pupil behaviours by placing an "X" in the parentheses under the response which most suitably describes your professional opinion as you would perceive a majority of students.

In your opinion, please indicate how substantial the GAINS or LOSSES are in the following pupil behaviours which result from students being in a flexibly modular scheduled school. If you cannot respond, do

not answer the question. An example follows.

PUPIL BEHAVIOURS	← GAINS			LOSSES →	
	Entirely	Partially	Not At All	Partially	Entirely
1. Learning	(X)	( )	( )	( )	( )

would mean substantial gains in learning on the part of the student could be attributed entirely to flexible modular scheduling

2. Learning	( )	( )	( )	(X)	( )

would mean substantial losses in learning on the part of the student could be attributed partially to flexible modular scheduling

3. Learning	( )	( )	(X)	( )	( )

would mean that neither a substantial gain nor a substantial loss in learning has occurred as a result of flexible modular scheduling

Question Sheet. In your opinion, please indicate how substantial the GAINS or LOSSES are in the following pupil behaviours which result from students being in a flexibly modular scheduled school. If you cannot respond, do not answer the question.

PUPIL BEHAVIOURS	← GAINS		Not At All	LOSSES →	
	Entirely	Partially		Partially	Entirely
1. Interest	( )	( )	( )	( )	( )
2. Motivation Level	( )	( )	( )	( )	( )
3. Adjustment to Learning Situation	( )	( )	( )	( )	( )
4. General Industry & Application to Task	( )	( )	( )	( )	( )
5. Social Adjustment	( )	( )	( )	( )	( )
6. Creativity	( )	( )	( )	( )	( )
7. Critical Thinking	( )	( )	( )	( )	( )
8. Independent Inquiry	( )	( )	( )	( )	( )
9. Academic Achievement	( )	( )	( )	( )	( )

APPENDIX B

PRELIMINARY STUDENT QUESTIONNAIRE

To The Student. At present our school is operating under a computerized modular flexible scheduling system. In brief, this involves the use of a computer to generate an individual timetable for every student at the school, as well as staff scheduling, designation of classrooms, labs, etc.

Your student handbook states the following as reasons for embarking upon such a system:

1. To encourage all students to become involved and active in the learning process.
2. To allow teachers to meet with students for individual and small group discussions.
3. To increase choice of subjects available to students.
4. To permit the student to develop his program to meet his emerging personal, educational and employment goals.

I am interested in how students are functioning under such a system.

Respond to each of the questions which follow by giving a clear, concise statement as if they apply to you or someone you know. You are not required to identify yourself by name.

1. In what way(s), if any, does modular flexible scheduling increase educational opportunities for students?

2. How does flexible scheduling lead to more responsibility on the part of a student for his learning?

3. How are unstructured periods being used by you as students?

4. How does flexible scheduling adapt itself to the needs of a slow learner, the very bright and/or the maladjusted student?

5. Would flexible scheduling be possible in buildings that are older and more traditionally constructed? Explain.

A Sample of Statements by Students.

1. I waste most of my unscheduled time.
2. I am able to select from more courses for my program.
3. I am doing more independent inquiry in the resource centre.
4. I am more highly motivated this year by being able to take the courses I like.
5. I can make up a credit I was short of last year.
6. I am able to take Business Education subject(s) even though I am not in that program.
7. I feel the inter-room spirit for sports is not the same.

APPENDIX C

STUDENT ATTITUDE TOWARD FLEXIBLE MODULAR SCHEDULING INNOVATIONS

At present our school is operating under a computerized flexible modular scheduling system. In brief, this involves the use of a computer to generate an individual timetable for every student at the school as well as scheduling of staff, designation of classrooms, labs, etc.

The following have been given as reasons for embarking upon such a system:

1. To encourage all students to become involved and active in the learning process.
2. To allow teachers to meet with students for individual and small group discussions.
3. To increase choice of subjects available to students.
4. To permit the student to develop his program to meet his emerging personal, educational and imployment goals.

I am interested in how students are functioning under such a system.

Respond to each of the following questions in <u>one</u> of five ways. That is, place an "X" in the parentheses under the word which best describes your opinion. If you are using a special machine scored answer sheet, note that the spaces "A", "B", "C", "D", and "E" correspond to the five possible parenthesized responses on the question sheet.

You do not have to identify yourself by name. Try to be as sincere and as honest as you can.

As you read each student statement, remember to ask yourself this question, "Is my response related to flexible modular scheduling?"

Example.

Student Statement	Responses				
	Strongly agree	Slightly agree	Neutral	Slightly disagree	Strongly disagree
My study habits have improved.	(X)	( )	( )	( )	( )

This student "strongly" agrees that his study habits have improved because of the inception of flexible modular scheduling.

Example of same response on machine scored sheet:

STUDENT STATEMENTS	RESPONSES				
	Strongly agree	Slightly agree	Neutral	Slightly disagree	Strongly disagree
	A	B	C	D	E
1. I am more interested in school because I can select courses I like.	( )	( )	( )	( )	( )
2. I am more highly motivated this year by being able to take courses I like.	( )	( )	( )	( )	( )
3. I find it easier to study this year.	( )	( )	( )	( )	( )
4. I can make up a credit I was short of last year.	( )	( )	( )	( )	( )
5. I feel the inter-room spirit for sports is not the same.	( )	( )	( )	( )	( )
6. I have more time to explore the world of information.	( )	( )	( )	( )	( )
7. I engage in more discussions in the small group sessions.	( )	( )	( )	( )	( )
8. I waste most of my unscheduled time.	( )	( )	( )	( )	( )
9. I am getting higher grades in my subjects.	( )	( )	( )	( )	( )
10. I am interested in most of my subjects instead of one or two.	( )	( )	( )	( )	( )
11. I decide, on my own, what subject to study.	( )	( )	( )	( )	( )
	A	B	C	D	E

STUDENT STATEMENTS	RESPONSES				
	Strongly agree	Slightly agree	Neutral	Slightly disagree	Strongly disagree
	A	B	C	D	E
12. I use my free time in more profitable ways.	( )	( )	( )	( )	( )
13. I am more responsible for my studies with fewer scheduled classes.	( )	( )	( )	( )	( )
14. I study better after taking a break in the informal study area.	( )	( )	( )	( )	( )
15. I am able to take part in extra-curricular activities during the regular school day.	( )	( )	( )	( )	( )
16. I understand my subject matter better this term.	( )	( )	( )	( )	( )
17. I am doing more independent inquiry in the resource centre(s).	( )	( )	( )	( )	( )
18. I will get more credits this year.	( )	( )	( )	( )	( )
19. I find school very boring.	( )	( )	( )	( )	( )
20. I get more homework done at school.	( )	( )	( )	( )	( )
21. I meet more students moving from class to class.	( )	( )	( )	( )	( )
22. I don't have to follow the group.	( )	( )	( )	( )	( )
23. I do more learning because there is less teaching.	( )	( )	( )	( )	( )
	A	B	C	D	E

STUDENT STATEMENTS	RESPONSES				
	Strongly agree	Slightly agree	Neutral	Slightly disagree	Strongly disagree
	A	B	C	D	E
24. I read more books than I usually do.	( )	( )	( )	( )	( )
25. I am getting lower marks than in previous years.	( )	( )	( )	( )	( )
26. I do not get behind in my studies the way I used to.	( )	( )	( )	( )	( )
27. I am able to discuss some of my school work with other students.	( )	( )	( )	( )	( )
28. I can choose my own projects.	( )	( )	( )	( )	( )
29. I'm beginning to think for myself.	( )	( )	( )	( )	( )
30. I have been exploring new ideas in my free time.	( )	( )	( )	( )	( )
31. I have more opportunity to see my teachers for assistance.	( )	( )	( )	( )	( )
	A	B	C	D	E

PLEASE COMPLETE THE FOLLOWING:

1. Grade (check one)

   10 _____

   11 _____

   12 _____

2. Area (check one)

   Fort Garry _____

   Grand Forks City _____

   Grand Forks Air Base _____

APPENDIX D

COMPLETE RESULTS OF THE STUDENT QUESTIONNAIRE

APR 19 1971

STUDENT ATTITUDE TOWARD
FLEXIBLE MODULAR SCHEDULING INNOVATIONS

COURSE-
SECTION- ALL GRADES VMC

CUES	-A-		-B-		-C-		-D-		-E-		-NR-	
NUMB	NUMB	PERCENT	NUMB	PERCENT	NUMB	PERCENT	NUMB	PERCENT	NUMB	PERCENT	NUMB	PERCENT
1	294	39.60%	280	39.05%	95	13.24%	31	4.32%	26	3.62%	1	.13%
2	123	17.15%	295	41.14%	193	26.91%	63	8.78%	41	5.71%	2	.27%
3	79	11.01%	173	24.12%	224	31.24%	133	18.54%	108	15.06%		.00%
4	127	17.71%	93	12.97%	409	57.04%	30	4.18%	49	6.83%	9	1.25%
5	272	37.93%	147	20.50%	189	26.35%	55	7.67%	54	7.53%		.00%
6	112	15.62%	233	32.49%	197	27.47%	103	14.36%	70	9.76%	2	.27%
7	83	11.57%	155	21.61%	224	31.24%	122	17.01%	129	17.99%	4	.55%
8	110	15.34%	152	21.19%	120	16.73%	184	25.66%	148	20.64%	3	.41%
9	78	10.87%	154	21.47%	208	29.00%	149	20.78%	126	17.57%	2	.27%
10	140	19.52%	223	31.10%	131	18.27%	122	17.01%	100	13.94%	1	.13%
11	362	50.48%	214	29.84%	84	11.71%	33	4.60%	21	2.92%	3	.41%
12	150	20.92%	215	29.98%	212	29.56%	92	12.83%	46	6.41%	2	.27%
13	255	35.56%	235	32.77%	150	20.92%	37	5.16%	38	5.29%	2	.27%
14	256	35.70%	164	22.87%	163	22.73%	61	8.50%	72	10.04%	1	.13%
15	146	20.64%	165	23.31%	226	31.52%	79	11.01%	99	13.66%	1	.13%
16	116	16.17%	217	30.26%	200	27.89%	111	15.48%	73	10.18%		.00%
17	113	15.76%	243	33.89%	196	27.33%	88	12.27%	76	10.59%	1	.13%
18	89	12.41%	118	16.45%	341	47.55%	97	13.52%	66	9.20%	6	.83%
19	142	19.80%	168	23.43%	144	20.08%	168	23.43%	92	12.83%	3	.41%
20	266	37.09%	199	27.75%	72	10.04%	87	12.13%	90	12.55%	3	.41%
21	311	43.37%	205	28.59%	117	16.31%	50	6.97%	32	4.46%	2	.27%
22	333	46.44%	205	28.59%	129	17.99%	26	3.62%	19	2.64%	5	.69%
23	67	9.34%	124	17.29%	225	31.38%	175	24.40%	118	16.45%	4	.55%
24	130	18.13%	161	22.45%	181	25.24%	129	17.99%	111	15.48%	5	.69%
25	130	18.13%	134	18.68%	166	23.15%	146	20.36%	136	18.96%	5	.69%
26	95	13.24%	171	23.84%	230	32.07%	122	17.05%	84	11.71%	9	1.25%
27	255	35.56%	311	43.37%	99	13.65%	21	2.92%	22	3.06%	10	1.39%

1992

APR 19 1971

STUDENT ATTITUDE TOWARD
FLEXIBLE MODULAR SCHEDULING INNOVATIONS

COURSE-
SECTION- ALL GRADES VMC

QUES	-A-		-B-		-C-		-D-		-E-		-NR-	
NUMB	NUMB	PERCENT	NUMB	PERCENT	NUMB	PERCENT	NUMB	PERCENT	NUMB	PERCENT	NUMB	PERCENT
28	149	20.78%	181	25.24%	188	26.22%	95	13.24%	90	12.55%	14	1.95%
29	270	37.65%	268	37.37%	124	17.29%	20	2.78%	23	3.20%	12	1.67%
30	144	20.08%	212	29.56%	222	30.96%	67	9.34%	56	7.81%	16	2.23%
31	180	25.10%	232	32.35%	140	19.52%	77	10.73%	68	9.48%	20	2.78%

TOTAL NUMBER TESTED- 717

APR 19 1971

STUDENT ATTITUDE TOWARD
FLEXIBLE MODULAR SCHEDULING INNOVATIONS

COURSE=
SECTION= GRADE 10 VHC

CUES NUMB	-A- NUMB	PERCENT	-B- NUMB	PERCENT	-C- NUMB	PERCENT	-D- NUMB	PERCENT	-E- NUMB	PERCENT	-NR- NUMB	PERCENT
1	124	45.58%	100	36.76%	34	12.50%	12	4.41%	2	.73%		.00%
2	49	18.01%	123	45.22%	72	26.47%	22	8.08%	5	1.83%	1	.36%
3	28	10.29%	65	23.89%	92	33.82%	52	19.11%	35	12.86%		.00%
4	39	14.33%	32	11.76%	162	59.55%	17	6.25%	20	7.35%	2	.73%
5	73	26.83%	65	23.89%	78	28.67%	32	11.76%	24	8.82%		.00%
6	43	15.80%	79	29.04%	83	30.51%	37	13.60%	28	10.29%	2	.73%
7	33	12.13%	52	19.11%	88	32.35%	48	17.64%	51	18.75%		.00%
8	32	11.76%	60	22.05%	50	18.38%	70	25.73%	58	21.32%	2	.73%
9	26	9.55%	70	25.73%	81	29.77%	55	20.22%	39	14.33%	1	.36%
10	51	18.75%	87	31.98%	47	17.27%	54	19.85%	32	11.76%	1	.36%
11	139	51.10%	78	28.67%	32	11.76%	12	4.41%	9	3.30%	2	.73%
12	52	19.11%	85	31.25%	89	32.72%	34	12.50%	10	3.67%	2	.73%
13	97	35.66%	86	31.61%	69	25.36%	10	3.67%	9	3.30%	1	.36%
14	105	38.60%	58	21.32%	59	21.69%	21	7.72%	28	10.29%	1	.36%
15	72	26.47%	66	24.26%	74	27.20%	34	12.50%	26	9.55%		.00%
16	51	18.75%	88	32.35%	77	28.30%	38	13.97%	18	6.61%		.00%
17	56	20.58%	84	30.88%	77	28.30%	34	12.50%	20	7.35%	1	.36%
18	35	12.86%	56	20.58%	131	48.16%	37	13.60%	11	4.04%	2	.73%
19	45	16.54%	60	22.05%	64	23.52%	59	21.69%	42	15.44%	2	.73%
20	116	42.64%	70	25.73%	20	7.35%	32	11.76%	32	11.76%	2	.73%
21	137	50.36%	71	26.10%	37	13.60%	13	4.77%	13	4.77%	1	.36%
22	132	48.52%	75	27.57%	51	18.75%	8	2.94%	5	1.83%	1	.36%
23	26	9.55%	56	20.58%	88	32.35%	57	20.95%	43	15.80%	2	.73%
24	42	15.44%	47	17.27%	79	29.04%	53	19.48%	48	17.64%	3	1.10%
25	44	16.17%	58	21.32%	62	22.79%	61	22.42%	43	15.80%	4	1.47%
26	33	12.13%	69	25.36%	92	33.82%	48	17.64%	23	8.45%	7	2.57%
27	95	34.92%	114	41.91%	36	13.23%	11	4.04%	7	2.57%	9	3.30%

APR 19 1971

STUDENT ATTITUDE TOWARD
FLEXIBLE MODULAR SCHEDULING INNOVATIONS

COURSE-
SECTION- GRADE 10 VHC

QUES NUMB	-A- NUMB	PERCENT	-B- NUMB	PERCENT	-C- NUMB	PERCENT	-D- NUMB	PERCENT	-E- NUMB	PERCENT	-NR- NUMB	PERCENT
28	60	22.05%	67	24.63%	67	24.63%	42	15.44%	25	9.19%	11	4.04%
29	109	40.07%	98	36.02%	41	15.07%	9	3.30%	6	2.20%	9	3.30%
30	49	17.64%	78	28.67%	99	36.39%	16	5.88%	18	6.61%	13	4.77%
31	68	25.00%	78	28.67%	64	23.52%	27	9.92%	19	6.98%	16	5.88%

TOTAL NUMBER TESTED- 272

APR 19 1971

STUDENT ATTITUDE TOWARD
FLEXIBLE MODULAR SCHEDULING INNOVATIONS

COURSE-
SECTION- GRADE 11 VMC

QUES NUMB	-A- NUMB	PERCENT	-B- NUMB	PERCENT	-C- NUMB	PERCENT	-D- NUMB	PERCENT	-E- NUMB	PERCENT	-NR- NUMB	PERCENT
1	99	44.79%	81	36.65%	30	13.57%	6	2.71%	5	2.26%		.00%
2	43	19.45%	99	44.79%	57	25.79%	10	4.52%	11	4.97%	1	.45%
3	28	12.66%	60	27.14%	67	30.31%	38	17.19%	28	12.66%		.00%
4	59	26.69%	34	15.38%	111	50.22%	6	2.71%	10	4.52%	1	.45%
5	94	42.53%	39	17.64%	67	30.31%	8	3.61%	13	5.88%		.00%
6	43	19.45%	78	35.29%	58	26.24%	26	11.76%	16	7.23%		.00%
7	31	14.02%	54	24.43%	67	30.31%	29	13.12%	37	16.74%	3	1.35%
8	38	17.19%	47	21.26%	38	17.19%	56	25.33%	41	18.55%	1	.45%
9	21	9.50%	50	22.62%	59	26.69%	47	21.26%	44	19.90%		.00%
10	48	21.71%	74	33.48%	42	19.00%	24	10.85%	33	14.93%		.00%
11	116	52.48%	65	29.41%	24	10.85%	10	4.52%	6	2.71%		.00%
12	44	19.90%	72	32.57%	63	28.50%	25	11.31%	17	7.69%		.00%
13	91	41.17%	67	30.31%	39	17.64%	10	4.52%	13	5.88%	1	.45%
14	79	35.74%	55	24.88%	52	23.52%	17	7.69%	18	8.14%		.00%
15	44	19.90%	55	24.88%	73	33.03%	24	10.85%	25	11.31%		.00%
16	34	15.38%	79	35.74%	56	25.33%	26	11.76%	26	11.76%		.00%
17	35	15.83%	72	32.57%	64	28.95%	22	9.95%	28	12.66%		.00%
18	34	15.38%	38	17.19%	106	47.96%	22	9.95%	21	9.50%		.00%
19	40	18.09%	45	20.36%	52	23.52%	55	24.88%	28	12.66%	1	.45%
20	83	37.55%	61	27.60%	23	10.40%	26	11.76%	27	12.21%	1	.45%
21	108	48.86%	55	24.88%	38	17.19%	15	6.78%	4	1.80%	1	.45%
22	100	45.24%	59	26.69%	39	17.64%	13	5.88%	7	3.16%	3	1.35%
23	19	8.59%	42	19.00%	73	33.03%	50	22.62%	36	16.28%	1	.45%
24	48	21.71%	63	28.50%	50	22.62%	27	12.21%	33	14.93%		.00%
25	45	20.36%	36	16.28%	57	25.79%	42	19.00%	41	18.55%		.00%
26	27	12.21%	53	23.98%	76	34.38%	38	17.19%	27	12.21%		.00%
27	86	38.91%	94	42.53%	28	12.66%	6	2.71%	7	3.16%		.00%

STUDENT ATTITUDE TOWARD
FLEXIBLE MODULAR SCHEDULING INNOVATIONS

COURSE= .
SECTION= GRADE 11 VMC

QUES NUMB	-A- NUMB	PERCENT	-B- NUMB	PERCENT	-C- NUMB	PERCENT	-D- NUMB	PERCENT	-E- NUMB	PERCENT	-OR- NUMB	PERCENT
28	53	23.98%	55	24.88%	56	25.33%	27	12.21%	29	13.12%	1	.45%
29	90	40.72%	91	41.17%	31	14.02%	2	.90%	6	2.71%	1	.45%
30	49	22.17%	74	33.48%	63	28.50%	18	8.14%	16	7.23%	1	.45%
31	64	28.95%	84	38.00%	32	14.47%	18	8.14%	21	9.50%	2	.90%

TOTAL NUMBER TESTED= 221

APR 19 1971

STUDENT ATTITUDE TOWARD
FLEXIBLE MODULAR SCHEDULING INNOVATIONS

COURSE=
SECTION= GRADE 12 VHC

QUES NUMB	-A- NUMB	PERCENT	-B- NUMB	PERCENT	-C- NUMB	PERCENT	-D- NUMB	PERCENT	-E- NUMB	PERCENT	-NR- NUMB	PERCENT
1	61	27.35%	98	43.94%	31	13.90%	13	5.82%	19	8.52%	1	.44%
2	31	13.90%	72	32.29%	64	28.69%	31	13.90%	25	11.21%		.00%
3	23	10.31%	48	21.52%	64	28.69%	43	19.28%	45	20.17%		.00%
4	29	13.00%	26	11.65%	136	60.98%	7	3.13%	19	8.52%	6	2.69%
5	105	47.08%	43	19.28%	43	19.28%	15	6.72%	17	7.62%		.00%
6	26	11.65%	76	34.08%	55	24.66%	40	17.93%	26	11.65%		.00%
7	19	8.52%	48	21.52%	69	30.94%	45	20.17%	41	18.38%	1	.44%
8	40	17.93%	45	20.17%	32	14.34%	57	25.56%	49	21.97%		.00%
9	31	13.90%	34	15.24%	67	30.04%	47	21.07%	43	19.28%	1	.44%
10	41	18.38%	62	27.80%	41	18.38%	44	19.73%	35	15.69%		.00%
11	107	47.98%	70	31.39%	28	12.55%	11	4.93%	6	2.69%	1	.44%
12	54	24.21%	57	25.56%	60	26.90%	33	14.79%	19	8.52%		.00%
13	67	30.04%	81	36.32%	42	18.83%	17	7.62%	16	7.17%		.00%
14	71	31.83%	51	22.86%	52	23.31%	23	10.31%	26	11.65%		.00%
15	32	14.34%	44	19.73%	78	34.97%	21	9.41%	47	21.07%	1	.44%
16	31	13.90%	49	21.97%	67	30.04%	47	21.07%	29	13.00%		.00%
17	22	9.86%	86	38.56%	55	24.66%	32	14.34%	28	12.55%		.00%
18	20	8.96%	24	10.76%	103	46.18%	38	17.04%	34	15.24%	4	1.79%
19	57	25.56%	63	28.25%	27	12.10%	54	24.21%	22	9.86%		.00%
20	67	30.04%	67	30.04%	29	13.00%	29	13.00%	31	13.90%		.00%
21	66	29.59%	78	34.97%	42	18.83%	22	9.86%	15	6.72%		.00%
22	101	45.29%	70	31.39%	39	17.48%	5	2.24%	7	3.13%	1	.44%
23	22	9.86%	30	13.45%	63	28.25%	68	30.49%	39	17.48%	1	.44%
24	40	17.93%	51	22.86%	51	22.86%	49	21.97%	30	13.45%	2	.89%
25	41	18.38%	40	17.93%	46	20.62%	43	19.28%	52	23.31%	1	.44%
26	35	15.69%	48	21.52%	62	27.80%	42	18.83%	34	15.24%	2	.89%
27	74	33.18%	103	46.18%	33	14.79%	4	1.79%	8	3.58%	1	.44%

APR 19 1971

STUDENT ATTITUDE TOWARD FLEXIBLE MODULAR SCHEDULING INNOVATIONS

COURSE-
SECTION- GRADE 12 VMC

QUES NUMB	-A- NUMB	PERCENT	-B- NUMB	PERCENT	-C- NUMB	PERCENT	-D- NUMB	PERCENT	-E- NUMB	PERCENT	-NR- NUMB	PERCENT
28	36	16.14%	58	26.00%	65	29.14%	26	11.65%	36	16.14%	2	.89%
29	71	31.83%	78	34.97%	52	23.31%	9	4.03%	11	4.93%	2	.89%
30	47	21.07%	59	26.45%	60	26.90%	33	14.79%	22	9.86%	2	.89%
31	48	21.52%	69	30.94%	44	19.73%	32	14.34%	28	12.55%	2	.89%

TOTAL NUMBER TESTED= 223

JUN 16 1971

STUDENT ATTITUDE TOWARD
FLEXIBLE MODULAR SCHEDULING INNOVATIONS

COURSE=
SECTION= ALL GRADES RRHS

QUES NUMB	-A- NUMB	PERCENT	-B- NUMB	PERCENT	-C- NUMB	PERCENT	-D- NUMB	PERCENT	-E- NUMB	PERCENT	-NR- NUMB	PERCENT
1	398	48.35%	265	32.19%	115	13.97%	38	4.61%	5	.60%	2	.24%
2	205	24.90%	325	39.48%	188	22.84%	85	10.32%	19	2.30%	1	.12%
3	208	25.27%	236	28.67%	174	21.14%	121	14.70%	83	10.08%	1	.12%
4	312	37.91%	121	14.70%	327	39.73%	29	3.52%	30	3.64%	4	.48%
5	186	22.60%	156	18.95%	314	38.15%	80	9.72%	85	10.32%	2	.24%
6	240	29.16%	250	30.37%	227	27.58%	74	8.99%	31	3.76%	1	.12%
7	297	36.08%	226	27.46%	182	22.11%	67	8.14%	47	5.71%	4	.48%
8	112	13.60%	165	20.04%	184	22.35%	181	21.99%	178	21.62%	3	.36%
9	184	22.35%	207	25.15%	240	29.16%	116	14.09%	75	9.11%	1	.12%
10	210	25.51%	242	29.40%	186	22.60%	109	13.24%	74	8.99%	2	.24%
11	445	54.07%	193	23.45%	109	13.24%	46	5.58%	28	3.40%	2	.24%
12	195	23.69%	235	28.55%	257	31.22%	91	11.05%	43	5.22%	2	.24%
13	363	44.10%	187	22.72%	181	21.99%	58	7.04%	32	3.88%	2	.24%
14	310	37.66%	212	25.75%	208	25.27%	58	7.04%	32	3.88%	3	.36%
15	258	31.34%	183	22.23%	226	27.46%	77	9.35%	76	9.23%	3	.36%
16	217	26.36%	290	35.23%	184	22.35%	77	9.35%	50	6.07%	5	.60%
17	165	20.04%	229	27.82%	222	26.97%	113	13.73%	86	10.44%	8	.97%
18	216	26.24%	138	16.76%	305	37.05%	94	11.42%	62	7.53%	8	.97%
19	133	16.16%	144	17.49%	197	23.93%	169	20.53%	171	20.77%	9	1.09%
20	331	40.21%	212	25.75%	116	14.09%	89	10.81%	67	8.14%	8	.97%
21	343	41.67%	192	23.32%	155	18.83%	67	8.14%	57	6.92%	9	1.09%
22	335	40.70%	220	26.73%	198	24.05%	38	4.61%	23	2.79%	9	1.09%
23	139	16.88%	148	17.98%	270	32.80%	148	17.98%	109	13.24%	9	1.09%
24	233	28.31%	163	19.80%	194	23.57%	135	16.40%	90	10.93%	8	.97%
25	98	11.90%	114	13.85%	173	21.02%	152	18.46%	278	33.77%	8	.97%
26	132	16.03%	181	21.99%	264	32.07%	152	18.46%	83	10.08%	11	1.33%
27	414	50.30%	267	32.44%	97	11.78%	22	2.67%	13	1.57%	10	1.21%

JUN 16 1971

STUDENT ATTITUDE TOWARD
FLEXIBLE MODULAR SCHEDULING INNOVATIONS

COURSE=
SECTION= ALL GRADES RRHS

QUES NUMB	-A- NUMB	PERCENT	-B- NUMB	PERCENT	-C- NUMB	PERCENT	-D- NUMB	PERCENT	-E- NUMB	PERCENT	-NR- NUMB	PERCENT
28	234	28.43%	245	29.76%	207	25.15%	72	8.74%	53	6.43%	12	1.45%
29	426	51.76%	248	30.13%	115	13.97%	17	2.06%	7	.85%	10	1.21%
30	205	24.90%	227	27.58%	281	34.14%	67	8.14%	34	4.13%	9	1.09%
31	296	35.96%	202	24.54%	147	17.86%	78	9.47%	81	9.84%	19	2.30%

TOTAL NUMBER TESTED= 823

MAY 25 1971

STUDENT ATTITUDE TOWARD
FLEXIBLE MODULAR SCHEDULING INNOVATIONS

COURSE-SECTION- GRADE 10 RRHS

QUES NUMB	-A- NUMB	PERCENT	-B- NUMB	PERCENT	-C- NUMB	PERCENT	-D- NUMB	PERCENT	-E- NUMB	PERCENT	-NR- NUMB	PERCENT
1	189	53.08%	108	30.33%	45	12.64%	13	3.65%	1	.28%		.00%
2	103	28.93%	134	37.64%	85	23.87%	27	7.58%	7	1.96%		.00%
3	103	28.93%	104	29.21%	73	20.50%	45	12.64%	31	8.70%		.00%
4	123	34.55%	50	14.04%	151	42.41%	13	3.65%	17	4.77%	2	.56%
5	76	21.34%	54	15.16%	141	39.60%	41	11.51%	43	12.07%	1	.28%
6	117	32.86%	113	31.74%	85	23.87%	30	8.42%	11	3.08%		.00%
7	109	30.61%	98	27.52%	92	25.84%	29	8.14%	27	7.58%	1	.28%
8	47	13.20%	62	17.41%	85	23.87%	79	22.19%	82	23.03%	1	.28%
9	71	19.94%	79	22.19%	114	32.02%	62	17.41%	30	8.42%		.00%
10	112	31.46%	96	26.96%	69	19.38%	45	12.64%	34	9.55%		.00%
11	206	57.86%	69	19.38%	48	13.48%	20	5.61%	12	3.37%	1	.28%
12	93	26.12%	102	28.65%	107	30.05%	37	10.39%	16	4.49%	1	.28%
13	171	48.03%	76	21.34%	72	20.22%	25	7.02%	11	3.08%	1	.28%
14	152	42.69%	91	25.56%	84	23.59%	19	5.33%	9	2.52%	1	.28%
15	124	34.83%	69	19.38%	105	29.49%	31	8.70%	26	7.30%	1	.28%
16	109	30.61%	122	34.26%	70	19.66%	28	7.86%	26	7.30%	1	.28%
17	85	23.87%	96	26.96%	99	27.80%	45	12.64%	28	7.86%	3	.84%
18	97	27.24%	71	19.94%	132	37.07%	28	7.86%	25	7.02%	3	.84%
19	48	13.48%	53	14.88%	85	23.87%	75	21.06%	91	25.56%	4	1.12%
20	159	44.66%	86	24.15%	40	11.23%	41	11.51%	26	7.30%	4	1.12%
21	160	44.94%	88	24.71%	66	18.53%	26	7.30%	13	3.65%	3	.84%
22	146	41.01%	90	25.28%	89	25.00%	17	4.77%	10	2.80%	4	1.12%
23	68	19.10%	74	20.78%	111	31.17%	56	15.73%	43	12.07%	4	1.12%
24	134	37.64%	57	16.01%	93	26.12%	62	17.41%	36	10.11%	4	1.12%
25	44	12.36%	62	17.41%	70	19.66%	59	16.57%	118	33.14%	3	.84%
26	70	19.66%	82	23.03%	114	32.02%	55	15.44%	29	8.14%	6	1.69%
27	182	51.12%	122	34.26%	36	10.11%	6	1.68%	9	2.52%	5	1.40%

MAY 25 1971

STUDENT ATTITUDE TOWARD
FLEXIBLE MODULAR SCHEDULING INNOVATIONS

COURSE-
SECTION- GRADE 10 RRHS

QUES NUMB	-A- NUMB	PERCENT	-B- NUMB	PERCENT	-C- NUMB	PERCENT	-D- NUMB	PERCENT	-E- NUMB	PERCENT	-NR- NUMB	PERCENT
28	113	31.74%	98	27.52%	94	26.40%	28	7.86%	18	5.05%	5	1.40%
29	178	50.00%	106	29.77%	56	15.73%	7	1.96%	4	1.12%	5	1.40%
30	89	25.00%	98	27.52%	124	34.83%	26	7.30%	14	3.93%	5	1.40%
31	131	36.79%	80	22.47%	73	20.50%	34	9.55%	28	7.86%	10	2.80%

TOTAL NUMBER TESTED- 356

MAY 25 1971

STUDENT ATTITUDE TOWARD
FLEXIBLE MODULAR SCHEDULING INNOVATIONS

COURSE-
SECTION- GRADE 11 RRHS

QUES NUMB	-A- NUMB	PERCENT	-B- NUMB	PERCENT	-C- NUMB	PERCENT	-D- NUMB	PERCENT	-E- NUMB	PERCENT	-NR- NUMB	PERCENT
1	135	50.75%	79	29.69%	40	15.03%	10	3.75%	2	.75%		.00%
2	67	25.18%	100	37.59%	60	22.55%	33	12.40%	6	2.25%		.00%
3	63	23.68%	84	31.57%	47	17.66%	48	18.04%	24	9.02%		.00%
4	105	39.47%	48	18.04%	95	35.71%	9	3.38%	8	3.00%	1	.37%
5	57	21.42%	52	19.54%	112	42.10%	17	6.39%	28	10.52%		.00%
6	74	27.81%	80	30.07%	79	29.69%	23	8.64%	10	3.75%		.00%
7	112	42.10%	74	27.81%	49	18.42%	21	7.89%	8	3.00%	2	.75%
8	33	12.40%	57	21.42%	48	18.04%	69	25.93%	58	21.90%	1	.37%
9	65	24.43%	78	29.32%	63	23.68%	37	13.90%	23	8.64%		.00%
10	62	23.30%	80	30.07%	70	26.31%	39	14.66%	14	5.26%	1	.37%
11	142	53.38%	68	25.56%	35	13.15%	11	4.13%	10	3.75%		.00%
12	70	26.31%	79	29.69%	77	28.94%	29	10.90%	11	4.13%		.00%
13	113	42.48%	65	24.43%	61	22.93%	15	5.63%	12	4.51%		.00%
14	91	34.21%	64	24.06%	78	29.32%	21	7.89%	11	4.13%	1	.37%
15	86	32.33%	61	22.93%	69	25.93%	20	7.51%	29	10.90%	1	.37%
16	63	23.68%	97	36.46%	60	22.55%	31	11.65%	12	4.51%	3	1.12%
17	53	19.92%	68	25.56%	70	26.31%	41	15.41%	31	11.65%	3	1.12%
18	82	30.82%	42	15.78%	93	34.96%	26	9.77%	20	7.51%	3	1.12%
19	40	15.03%	49	18.42%	63	23.68%	58	21.80%	54	20.30%	2	.75%
20	104	39.09%	70	26.31%	42	15.78%	22	8.27%	26	9.77%	2	.75%
21	112	42.10%	63	23.68%	47	17.66%	19	7.14%	23	8.64%	2	.75%
22	117	43.98%	67	25.18%	61	22.93%	13	4.88%	5	1.87%	3	1.12%
23	47	17.66%	41	15.41%	85	31.95%	52	19.54%	38	14.28%	3	1.12%
24	63	23.68%	58	21.80%	68	25.56%	44	16.54%	31	11.65%	2	.75%
25	32	12.03%	25	9.39%	60	22.55%	49	18.42%	97	36.46%	3	1.12%
26	40	15.03%	57	21.42%	80	30.07%	56	21.05%	31	11.65%	2	.75%
27	14	5.51%	71	26.68%	33	12.40%	10	3.75%	5	1.87%	2	.75%

MAY 25 1971

STUDENT ATTITUDE TOWARD
FLEXIBLE MODULAR SCHEDULING INNOVATIONS

COURSE-
SECTION- GRADE 11 RRHS

QUES NUMB	-A- NUMB	PERCENT	-B- NUMB	PERCENT	-C- NUMB	PERCENT	-D- NUMB	PERCENT	-E- NUMB	PERCENT	-NR- NUMB	PERCENT
28	82	30.82%	75	28.19%	69	25.93%	21	7.89%	15	5.63%	4	1.50%
29	149	56.01%	70	26.31%	35	13.15%	7	2.63%	2	.75%	3	1.12%
30	76	28.57%	77	28.94%	87	32.70%	16	6.01%	8	3.00%	2	.75%
31	94	35.33%	64	24.06%	46	17.29%	23	8.64%	33	12.40%	6	2.25%

TOTAL NUMBER TESTED- 266

MAY 25 1971

STUDENT ATTITUDE TOWARD
FLEXIBLE MODULAR SCHEDULING INNOVATIONS

COURSE-SECTION- GRADE 12 RRHS

QUES NUMB	-A- NUMB	-A- PERCENT	-B- NUMB	-B- PERCENT	-C- NUMB	-C- PERCENT	-D- NUMB	-D- PERCENT	-E- NUMB	-E- PERCENT	-NR- NUMB	-NR- PERCENT
1	74	36.81%	78	38.80%	30	14.92%	15	7.46%	2	.99%	2	.99%
2	35	17.41%	91	45.27%	43	21.39%	25	12.43%	6	2.98%	1	.49%
3	42	20.89%	43	23.88%	54	26.86%	28	13.93%	28	13.93%	1	.49%
4	84	41.79%	23	11.44%	81	40.29%	7	3.48%	5	2.48%	1	.49%
5	53	26.36%	50	24.87%	61	30.34%	22	10.94%	14	6.96%	1	.49%
6	49	24.37%	57	28.35%	63	31.34%	21	10.44%	10	4.97%	1	.49%
7	76	37.81%	54	26.86%	41	20.39%	17	8.45%	12	5.97%	1	.49%
8	32	15.92%	46	22.88%	51	25.37%	33	16.41%	38	18.90%	1	.49%
9	48	23.88%	50	24.87%	63	31.34%	17	8.45%	22	10.94%	1	.49%
10	36	17.91%	66	32.83%	47	23.38%	25	12.43%	26	12.93%	1	.49%
11	97	48.25%	56	27.86%	26	12.93%	15	7.46%	6	2.98%	1	.49%
12	32	15.92%	54	26.86%	73	36.31%	25	12.43%	16	7.96%	1	.49%
13	79	39.30%	46	22.88%	48	23.88%	18	8.95%	9	4.47%	1	.49%
14	67	33.33%	57	28.35%	46	22.88%	18	8.95%	12	5.97%	1	.49%
15	48	23.88%	53	26.36%	52	25.87%	26	12.93%	21	10.44%	1	.49%
16	45	22.38%	71	35.32%	54	26.86%	18	8.95%	12	5.97%	1	.49%
17	27	13.43%	65	32.33%	53	26.36%	27	13.43%	27	13.43%	2	.99%
18	37	18.40%	25	12.43%	80	39.80%	40	19.90%	17	8.45%	2	.99%
19	45	22.38%	42	20.89%	49	24.37%	36	17.91%	26	12.93%	3	1.49%
20	68	33.83%	56	27.86%	34	16.91%	26	12.93%	15	7.46%	2	.99%
21	71	35.32%	41	20.39%	42	20.89%	22	10.94%	21	10.44%	4	1.99%
22	72	35.82%	63	31.34%	48	23.88%	8	3.98%	8	3.98%	2	.99%
23	24	11.94%	33	16.41%	74	36.81%	40	19.90%	28	13.93%	2	.99%
24	66	32.83%	42	20.89%	33	16.41%	29	14.42%	23	11.44%	2	.99%
25	22	10.94%	27	13.43%	43	21.39%	44	21.89%	63	31.34%	2	.99%
26	22	10.94%	42	20.89%	70	34.82%	41	20.39%	23	11.44%	3	1.49%
27	34	16.92%	74	36.81%	28	13.93%	6	2.98%	6	2.98%	3	1.49%

MAY 25 1971

STUDENT ATTITUDE TOWARD
FLEXIBLE MODULAR SCHEDULING INNOVATIONS

COURSE-SECTION- GRADE 12 RRHS

QUES NUMB	-A- NUMB	-A- PERCENT	-B- NUMB	-B- PERCENT	-C- NUMB	-C- PERCENT	-D- NUMB	-D- PERCENT	-E- NUMB	-E- PERCENT	-NR- NUMB	-NR- PERCENT
28	39	19.40%	72	35.82%	44	21.89%	23	11.44%	20	9.95%	3	1.49%
29	99	49.25%	72	35.82%	24	11.94%	3	1.49%	1	.49%	2	.99%
30	40	19.90%	52	25.87%	70	34.82%	25	12.43%	12	5.97%	2	.99%
31	71	35.32%	58	28.85%	28	13.93%	21	10.44%	20	9.95%	3	1.49%

TOTAL NUMBER TESTED- 201

MAY 26 1971

STUDENT ATTITUDE TOWARD
FLEXIBLE MODULAR SCHEDULING INNOVATIONS

COURSE-
SECTION- AIR BASE RRHS

QUES NUMB	-A- NUMB	PERCENT	-B- NUMB	PERCENT	-C- NUMB	PERCENT	-D- NUMB	PERCENT	-E- NUMB	PERCENT	-NR- NUMB	PERCENT
1	89	45.17%	67	34.01%	24	12.18%	13	6.59%	4	2.03%		.00%
2	57	28.93%	67	34.01%	41	20.81%	24	12.18%	8	4.06%		.00%
3	53	26.90%	54	27.41%	37	18.78%	30	15.22%	23	11.67%		.00%
4	80	40.60%	24	12.18%	71	36.04%	9	4.56%	11	5.58%	2	1.01%
5	62	31.47%	23	11.67%	83	42.13%	10	5.07%	19	9.64%		.00%
6	64	32.48%	64	32.48%	45	22.84%	13	6.59%	11	5.58%		.00%
7	81	41.11%	45	22.84%	44	22.33%	17	8.62%	9	4.56%	1	.50%
8	31	15.73%	29	14.72%	43	21.82%	54	27.41%	40	20.30%		.00%
9	38	19.28%	45	22.84%	61	30.96%	31	15.73%	22	11.16%		.00%
10	54	27.41%	61	30.96%	38	19.28%	23	11.67%	21	10.65%		.00%
11	109	55.32%	42	21.31%	29	14.72%	10	5.07%	7	3.55%		.00%
12	58	29.44%	39	19.79%	65	32.99%	22	11.16%	13	6.59%		.00%
13	91	46.19%	41	20.81%	39	19.79%	16	8.12%	10	5.07%		.00%
14	78	39.59%	45	22.84%	50	25.38%	16	8.12%	7	3.55%	1	.50%
15	59	29.94%	36	18.27%	59	29.94%	15	7.61%	28	14.21%		.00%
16	51	25.88%	60	30.45%	45	22.84%	23	11.67%	16	8.12%	2	1.01%
17	44	22.33%	48	24.36%	54	27.41%	24	12.18%	26	13.19%	1	.50%
18	58	29.44%	27	13.70%	75	38.07%	17	8.62%	20	10.15%		.00%
19	38	19.28%	32	16.24%	41	20.81%	44	22.33%	40	20.30%	2	1.01%
20	93	47.20%	42	21.31%	18	9.13%	24	12.18%	19	9.64%	1	.50%
21	92	46.70%	33	16.75%	35	17.76%	16	8.12%	21	10.65%		.00%
22	90	45.68%	33	16.75%	57	28.93%	10	5.07%	6	3.04%	1	.50%
23	42	21.31%	30	15.22%	57	28.93%	34	17.25%	33	16.75%	1	.50%
24	61	30.96%	38	19.28%	39	19.79%	31	15.73%	28	14.21%		.00%
25	27	13.70%	27	13.70%	49	24.87%	31	15.73%	62	31.47%	1	.50%
26	39	19.79%	41	20.81%	64	32.49%	31	15.73%	19	9.64%	3	1.52%
27	108	54.82%	58	29.44%	22	11.16%	4	2.03%	3	1.52%	2	1.01%

MAY 26 1971

STUDENT ATTITUDE TOWARD
FLEXIBLE MODULAR SCHEDULING INNOVATIONS

COURSE=
SECTION= AIR BASE RRHS

QUES	-A-		-B-		-C-		-D-		-E-		-NR-	
NUMB	NUMB	PERCENT	NUMB	PERCENT	NUMB	PERCENT	NUMB	PERCENT	NUMB	PERCENT	NUMB	PERCENT
28	73	37.05%	43	21.82%	52	26.39%	17	8.62%	8	4.06%	4	2.03%
29	110	55.83%	47	23.85%	35	17.76%	2	1.01%	1	.50%	2	1.01%
30	59	29.44%	48	24.36%	69	35.02%	12	6.09%	8	4.06%	2	1.01%
31	90	45.68%	38	19.28%	32	16.24%	15	7.61%	17	8.62%	5	2.53%

TOTAL NUMBER TESTED= 197

MAY 26 1971

STUDENT ATTITUDE TOWARD
FLEXIBLE MODULAR SCHEDULING INNOVATIONS

COURSE=
SECTION= CITY RRHS

QUES	-A-		-B-		-C-		-D-		-E-		-NR-	
NUMB	NUMB	PERCENT	NUMB	PERCENT	NUMB	PERCENT	NUMB	PERCENT	NUMB	PERCENT	NUMB	PERCENT
1	309	49.36%	198	31.62%	91	14.53%	25	3.99%	1	.15%	2	.31%
2	148	23.64%	258	41.21%	147	23.48%	61	9.74%	11	1.75%	1	.15%
3	155	24.76%	182	29.07%	137	21.88%	91	14.53%	60	9.58%	1	.15%
4	232	37.06%	97	15.49%	256	40.89%	20	3.19%	19	3.03%	2	.31%
5	124	19.80%	133	21.24%	231	36.90%	70	11.18%	66	10.54%	2	.31%
6	176	28.11%	186	29.71%	182	29.07%	61	9.74%	20	3.19%	1	.15%
7	216	34.50%	181	28.91%	138	22.04%	50	7.98%	38	6.07%	3	.47%
8	81	12.93%	136	21.72%	141	22.52%	127	20.28%	138	22.04%	3	.47%
9	146	23.32%	162	25.87%	179	28.59%	85	13.57%	53	8.46%	1	.15%
10	156	24.92%	181	28.91%	148	23.64%	86	13.73%	53	8.46%	2	.31%
11	336	53.67%	151	24.12%	80	12.77%	36	5.75%	21	3.35%	2	.31%
12	137	21.88%	196	31.30%	192	30.67%	69	11.02%	30	4.79%	2	.31%
13	272	43.45%	146	23.32%	142	22.68%	42	6.70%	22	3.51%	2	.31%
14	232	37.06%	167	26.67%	158	25.23%	42	6.70%	25	3.99%	2	.31%
15	199	31.78%	147	23.48%	167	26.67%	62	9.90%	48	7.66%	3	.47%
16	166	26.51%	230	36.74%	139	22.20%	54	8.62%	34	5.43%	3	.47%
17	121	19.32%	181	28.91%	168	26.83%	99	14.21%	60	9.58%	7	1.11%
18	158	25.23%	111	17.73%	230	36.74%	77	12.30%	42	6.70%	8	1.27%
19	95	15.17%	112	17.89%	156	24.92%	125	19.96%	131	20.92%	7	1.11%
20	238	38.01%	170	27.15%	98	15.65%	65	10.38%	48	7.66%	7	1.11%
21	251	40.09%	159	25.39%	120	19.16%	51	8.14%	36	5.75%	9	1.43%
22	245	39.13%	187	29.87%	141	22.52%	28	4.47%	17	2.71%	8	1.27%
23	97	15.49%	118	18.84%	213	34.02%	114	18.21%	76	12.14%	8	1.27%
24	172	27.47%	125	19.96%	155	24.76%	104	16.61%	62	9.90%	8	1.27%
25	71	11.34%	87	13.89%	124	19.80%	121	19.32%	216	34.50%	7	1.11%
26	93	14.85%	140	22.36%	200	31.94%	121	19.32%	64	10.22%	8	1.27%
27	306	48.88%	209	33.38%	75	11.98%	18	2.87%	10	1.59%	8	1.27%

MAY 26 1971

STUDENT ATTITUDE TOWARD
FLEXIBLE MODULAR SCHEDULING INNOVATIONS

COURSE=
SECTION= CITY BRHS

QUES	-A-		-B-		-C-		-D-		-E-		-NR-	
NUMB	NUMB	PERCENT	NUMB	PERCENT	NUMB	PERCENT	NUMB	PERCENT	NUMB	PERCENT	NUMB	PERCENT
28	161	25.71%	202	32.26%	155	24.76%	55	8.78%	45	7.18%	8	1.27%
29	316	50.47%	201	32.10%	80	12.77%	15	2.39%	6	.95%	8	1.27%
30	147	23.48%	179	28.59%	212	33.86%	55	8.78%	26	4.15%	7	1.11%
31	206	32.90%	164	26.19%	115	18.37%	63	10.06%	64	10.22%	14	2.23%

TOTAL NUMBER TESTED= 626