A Proposed Program for Adjusting the Released-Time Seminary Program of The Church of Jesus Christ of Latter-Day Saints to Three Major Flexible Scheduling Programs

Wallace Dea Montague

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A PROPOSED PROGRAM
FOR ADJUSTING THE RELEASED-TIME SEMINARY PROGRAM
OF THE CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS
TO THREE MAJOR FLEXIBLE SCHEDULING PROGRAMS

A Thesis
Presented to the
Graduate Department of Religious Instruction
Brigham Young University

In Partial Fulfillment
of the Requirements for the Degree
Master of Religious Education

by
Wallace Dea Montague

May 1967
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. INTRODUCTION</strong></td>
<td>1</td>
</tr>
<tr>
<td>Schedule Modification Programs</td>
<td>4</td>
</tr>
<tr>
<td>Statement of Problem</td>
<td>9</td>
</tr>
<tr>
<td>Need of the Study</td>
<td>11</td>
</tr>
<tr>
<td>Research Design</td>
<td>11</td>
</tr>
<tr>
<td>Delimitations of the Study</td>
<td>12</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>13</td>
</tr>
<tr>
<td>Outline of the Study</td>
<td>14</td>
</tr>
<tr>
<td><strong>II. REVIEW OF LITERATURE</strong></td>
<td>16</td>
</tr>
<tr>
<td><strong>III. ADJUSTING THE RELEASED-TIME SEMINARY PROGRAM TO THE PERIOD EXCHANGE CONCEPT OF SCHEDULING</strong></td>
<td>25</td>
</tr>
<tr>
<td>Description of the Concept</td>
<td>25</td>
</tr>
<tr>
<td>Evaluation of the Period Exchange or Period Rotation Concept of Scheduling as Pertains to the Released-Time Seminary Program</td>
<td>43</td>
</tr>
<tr>
<td>Proposed Adjustments of the Released-Time Program to the Period Exchange or Rotation Concept of Scheduling</td>
<td>47</td>
</tr>
<tr>
<td><strong>IV. ADJUSTING THE RELEASED TIME SEMINARY PROGRAM TO THE MODULAR CONCEPT OF SCHEDULING</strong></td>
<td>51</td>
</tr>
<tr>
<td>Background</td>
<td>51</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>52</td>
</tr>
<tr>
<td>Description of the Concept</td>
<td>53</td>
</tr>
<tr>
<td>Figure</td>
<td>Page</td>
</tr>
<tr>
<td>--------</td>
<td>------</td>
</tr>
<tr>
<td>1. Standard Schedule</td>
<td>27</td>
</tr>
<tr>
<td>2. Even Period Exchange</td>
<td>27</td>
</tr>
<tr>
<td>3. Straight Block Schedule</td>
<td>29</td>
</tr>
<tr>
<td>4. Modified Block Schedule</td>
<td>31</td>
</tr>
<tr>
<td>5. Standard Sequence Rotation</td>
<td>31</td>
</tr>
<tr>
<td>6. Displaced Rotation</td>
<td>34</td>
</tr>
<tr>
<td>7. Compressed Rotation</td>
<td>36</td>
</tr>
<tr>
<td>8. Expanded Rotation</td>
<td>38</td>
</tr>
<tr>
<td>9. Variable Period Length Rotation</td>
<td>40</td>
</tr>
<tr>
<td>10. Variable Period Length Combined with the Sequence Rotation</td>
<td>40</td>
</tr>
<tr>
<td>11. Variable Period Length with Five Periods in Sequence Rotation</td>
<td>42</td>
</tr>
<tr>
<td>12. Variable Period Length with Five Periods in Rotation and Two Periods Rigid</td>
<td>42</td>
</tr>
<tr>
<td>13. Variable Period Length with Split Period for Simultaneous Lunch and Class Activity</td>
<td>44</td>
</tr>
<tr>
<td>14. Area of Curriculum: Assuming a Weekly Schedule Module</td>
<td>60</td>
</tr>
<tr>
<td>15. Allocation of Time to the Curricular Area</td>
<td>62</td>
</tr>
<tr>
<td>Figure</td>
<td>Page</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>16. Assignment of Subjects to Instructional Area</td>
<td>62</td>
</tr>
<tr>
<td>17. Modular Units Used in Curriculum Planning</td>
<td>64</td>
</tr>
<tr>
<td>18. Summary of Specifications and Definitions</td>
<td>67</td>
</tr>
<tr>
<td>19. Possible Basic Framework Decision</td>
<td>69</td>
</tr>
<tr>
<td>20. Three Phase Course Structure</td>
<td>72</td>
</tr>
<tr>
<td>21. Five Phase Course Structure</td>
<td>72</td>
</tr>
<tr>
<td>22. Five Phase Course Structure</td>
<td>74</td>
</tr>
<tr>
<td>23. Two Phase Course Structure</td>
<td>76</td>
</tr>
<tr>
<td>24. Sections Assigned to Teacher X</td>
<td>84</td>
</tr>
<tr>
<td>25. Weekly Schedule of Teacher X</td>
<td>84</td>
</tr>
<tr>
<td>26. Diagram of Scheduling Phases</td>
<td>90</td>
</tr>
<tr>
<td>27. Daily Demand Computer Scheduling Overview</td>
<td>101</td>
</tr>
<tr>
<td>28. Detail Day 1</td>
<td>103</td>
</tr>
<tr>
<td>29. Detail Day 2</td>
<td>105</td>
</tr>
<tr>
<td>30. Detail Day 3</td>
<td>106</td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

It is justifiable that the educational institutions of the nation are continually in the public eye; and it is understandable that much is written and said concerning their personnel, curricula, programs, methods, and goals. As a result of the publicity thus received, much criticism is leveled and many inconsistencies are exposed to public view. However, one of the great consistencies thus brought to light is the continual change in the entire educational structure.¹ As the needs of the society have changed, it has become necessary to alter the educational programs in order that they could better prepare the members of the society to assume a role that would be for the benefit of all concerned.

Much of the success, and many of the problems of education have arisen from the democratic philosophy which permeates its structure in America: that education should be available to, and even required of, all members of the community. In the past, the concern of educators has been to educate in quantity. It is now becoming apparent that if our society is to survive in the present age, it will be necessary to be more and more concerned about the quality of education presented in the schools.² Few educators advocate the status quo in the educational program, but the debate now raging in educational circles concerns itself

²Ibid.
with the depth of change that should be made. As a result of the research and experimentation in the area of change, there have developed, among others, three schools of thought advocating the avenues to follow in order to improve the quality of education in America:

1. That the number of students in the schools be reduced (quantity) and allow only the more talented to proceed into high school and on to college or university work.

2. That the educational programs be expanded by adding more schools, more teachers, more courses, more supervision and longer school days, thus affording more opportunity to meet the individual needs of the student.

3. That before any deletions or additions are made in the educational structure a careful examination be carried forth to determine just exactly what is being done. The proponents of this course of action are concerned that the rationale for what is being done in the schools be better understood.3

The concepts and ideas of the third group seem to involve the greatest potential change, and for that reason require thorough study and critical evaluation. In keeping with this philosophy, on January 26, 1956, the executive committee of the National Association of Secondary School Principals (N.A.S.S.P.) appointed a "Commission on the Experimental Study of the Utilization of the Staff in the Secondary School."4 The results of the far-reaching study and investigation

3Ibid.

carried out by this group is known as the "N.A.S.S.P. Staff Utilization Study."

The inquiry occasioned by the N.A.S.S.P. Staff Utilization Study has given renewed impetus to educators who have questioned the traditional structure with its existing goals, methods, and techniques. They are experimenting and searching for better answers, and already some challenging ideas are emerging, such as the following:

1. Individual differences can be recognized and individual programs can be tailored to meet them.

2. Time can be utilized more effectively. There is nothing sacred about the 45-50 minute class period.

3. Human talents can be utilized more efficiently. Thirty students and one teacher are not always the best arrangement for maximum results in teaching-learning situations.

4. Physical facilities can be more fully utilized to facilitate the educational process.\(^5\)

As the above ideas have been developed and reported to the N.A.S.S.P. organization, educators have become more united in their resolve that something must be done to assist the schools of the nation to achieve the high goals set for them. Just what is to be done, and how it is to be accomplished, is still a question unanswered.

I. SCHEDULE MODIFICATION PROGRAMS

A. W. Sturgess, assistant professor of education, Winona State College, Winona, Minnesota, made the following statement:

It would seem to the author that, until existing facilities can be replaced, many administrators would find value in suggested innovations in their existing plant to incorporate the new approaches in scheduling as described by such major contributors as Dr. J. Lloyd Trump.6

Dr. J. Lloyd Trump, associate secretary of the National Association of Secondary School Principals, is a proponent of the philosophy expressed by Schopenhauer: "Ordinary people think merely how they spend their time; a man of intellect tries to use it." He, among others, has championed the theory of schedule modification as a means by which the schools can make optimum use of (1) time, (2) space, and (3) the abilities and talents of the staff. These, when properly used, would result in the maximum benefit to the student—the goal of the educational structure.

In building a case for the cause of schedule modification, Dr. Trump points out the fact that this is not a new innovation, but rather a modern interpretation of certain methods and procedures used during earlier periods of development of the educational system. He compares present scheduling programs with the "antiquated" one-room school:


These one-room schools had several built-in advantages. Time was more truly at the disposal of the teachers and pupils in those schools. A teacher could, and the good ones did, spend more time with one group of students when they needed more time. She could reduce the time for other groups who did not need so much on a given day, or during a given week. The students in those schools had more time away from class groups and could plan to use it for their own purposes. Student groups could, and were, easily changed. Sometimes the teacher combined grades to teach certain subjects, even taught the whole school on occasion. Work was in fact ungraded at times. Although space in the school was limited both in quantity and usability, it was readily at the disposal of teachers and pupils by moving chairs, tables, or portable partitions. There was flexibility in the one-room school and good teachers and students made the most of it.

Unfortunately, we became so enamored with this one-room school structure that when we grew larger educationally we continued it as the self-contained classroom, failing to recognize the limitations thus imposed on both teachers and students. A group of students was locked in with one teacher and whatever strengths and limitations that teacher possessed. It was difficult and expensive to introduce educational technology into these rooms. The graded system stratified pupils so that a room became a fourth-grade room or a class became tenth-grade English, forcing us to devise many ways to fit students with diverse interests and talents into that rigid framework.

Small secondary schools possessed some of the advantages of the one-room schools; but these advantages disappeared when schools became larger. Administrators and teachers confused equality of opportunity with uniformity. A smooth-running school became the objective. We know the rigid patterns that developed. Classes were of standard size; optimum teacher-pupil ratio goals were established; class periods were uniform in length; curricular content was fitted into standard-size Carnegie units. Administrators developed many kinds of quantitatively defined institutional arrangements for learning and dealing with teachers.

Finally, however, we are beginning to recognize and learn ways to cope with the problem. We are returning the use of time, space, and numbers, and content to those who need it—the teachers and their pupils. This is happening even in the larger schools that symbolize so wonderfully well our concept of education for all youth. At the same time, we are learning how to cope with another equally important problem: How can one treat a pupil
as an individual even though he is one in a great mass of students? Solving these problems constitutes the exciting challenge of our day.\(^8\)

Education is defined as "the process of training and developing the knowledge, skills, mind, character, etc. . . ."\(^9\) Schools are institutions established for this purpose. Proceeding on the premise that the "training and developing" is to bring about change in the life of the individual, there are three factors of prime importance, after having determined a curricula and acquired a competent staff: (1) the student, (2) time, and (3) facilities—the student being the focal point of the entire process. The problem facing educators is how to put the three factors together in such a way as to make optimum use of all three, in order that the individual student may receive the greatest advantage. In the traditional program, for example, time is the master:

Every 50-55 minutes the comparative quiet of today's school is shattered. A bell rings, students burst into corridors, tramp to other classrooms, doors shut, the bell rings again, and a new class period begins. The bell is no respector of student's interest or teacher's plans. It cares little that equipment in some classes takes ten minutes to store or that presentations in others must be interrupted midway. Its sole function is to punctuate the day into six or seven exactly equal periods of time.\(^10\)

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\(^8\)Ibid., p. 367-368.


It is not surprising, therefore, that one of the first areas of the school program to receive the attention of the innovators was scheduling. In order that this new approach might be distinguished from the traditional one, it was termed flexible scheduling. The resultant programs, though many and varied in their approach, have been, for the purpose of this study, grouped into three major categories:

1. **The period exchange or rotating period concept of scheduling.** This is the rather uncomplicated type of scheduling modification which is implemented merely by administrative decision, and accomplished without the use of additional resources or personnel. These programs are implemented by exchanging one short daily class period for one extended period on another day, or by rotating the classes from one period to another on succeeding days of the week.

2. **The modular concept of scheduling.** This is a more involved type of schedule modification, requiring much advanced planning by administration and staff. The modular schedule often requires the addition of staff and facilities. To implement this system, each course is planned with a peculiar structure that is particularly suited to the instructional objective of the course. This type of scheduling program results in a variable schedule, with each day of the week different from the others, as far as the student schedule is concerned. However, since the program is usually designed for a five-day cycle, the same day of each week is identical. The schedule is established at the beginning of the year, and, in most instances, remains constant or rigid for the entire school year. Some schools reschedule their program on a semester basis.
3. **The daily demand concept of scheduling.** The daily demand concept is the most sophisticated and drastic of the three, in that it provides for the daily rescheduling of class time, class size, and facility. It is the nearest approach to a truly flexible schedule. The proponents of this concept reason that if flexibility is desirable in the school program, the teacher should have available the means by which he can tailor his instructional schedule and procedures to meet current needs, which needs cannot be anticipated a year in advance. Hence, the daily demand concept allows the teacher the advantage of requesting students, time, and facilities which will fit the particular lesson presentation he is to give two days in the future.

However, the production of a daily schedule for each student and teacher becomes a task of gigantic proportions. Although this process has been carried forth on a limited basis by use of manual procedures, it is apparent that an expanded program requires additional help.

In emphasizing his conviction concerning the importance of schedule modification programs. Dr. J. Lloyd Trump pointed out a solution to the production of a daily schedule:

But whether with the aid of electronic devices or through the imaginative work of the staff, project experience showed that flexible scheduling and schedule modifications are indispen-sable factors in a school program whose goal is to develop the talents of individual students by using the best skills of individual teachers.11

The high-speed electronic digital computer proved to be the device best suited to finding solutions to the scheduling problems. It has been

used in the development and production of schedules for the modular scheduling programs, and was also utilized in the production of daily student and teacher schedules for the daily demand concept of scheduling.

The three scheduling concepts above noted are discussed in the succeeding chapters of this study.

II. STATEMENT OF PROBLEM

In keeping with the concept of separation of church and state, which was a matter of constitutional law in the United States, the Church of Jesus Christ of Latter-day Saints, in conjunction with the school board of Granite School District, Salt Lake City, Utah, in 1912 inaugurated a program of released-time week-day religious instruction. The board authorized students to be released (on parental request) for a period during the day, when their program permitted, to attend an independent school, the Seminary, built adjacent to the Granite High School. This method of providing religious education as a supplement to public education, yet completely separate and apart from it, proved such a success that similar seminaries were erected adjacent to high schools throughout the Rocky Mountain area wherever local boards of education permitted released time during the school day for this purpose.13


The released-time program remained independent, in that the seminary
buildings and the land upon which they stood were the property of the
Church of Jesus Christ of Latter-day Saints. Complete autonomy was also
enjoyed as to the course offerings, the preparation of outlines, and
the methods and techniques which were used in the presentation of the
subject matter.\footnote{In some areas the public schools were allowed by state and/or
local authority to grant high-school credit to students upon the comple-
tion of certain courses in the released-time program. (These were usually
the courses dealing with Old and New Testament history.) It was for this
reason, as well as for the overall up-grading of the teaching staff, that
those employed as teachers in the released-time program were required to
be certified teachers in the state where they were employed.}

Because of such complete legal separation, seminary administrators
and teachers felt the public schools should pursue whatever programs they
desired and that such programs should be of no concern to the released-
time program. This attitude ignored the close relationship which did
and must exist between the released-time program and the adjacent school.
The released-time seminary, of necessity, accepted the auxiliary role.
The whole success of the program was based on the availability of students,
and availability could well be determined by the school schedule. The
high school schedule, therefore, became a cause of major concern.

As high schools began investigating, experimenting with, and using
different schedule modification programs, the question arose as to the
effect such programs would have on the released-time seminary program.
This investigation was undertaken, therefore, (1) to determine the nature
of the three scheduling concepts noted above, and (2) to determine the

extent of the adjustment necessary in the released-time program in order for it to be compatible with each scheduling concept.

III. NEED OF THE STUDY

This study was significant because there had been no previous inquiry into the problem. Those involved with the released-time program should be made aware of the scheduling programs being investigated by the high schools. Further, those working in the released-time program should be informed about such changes in the public schools because:

1. Such changes can often be of assistance in the accomplishment of goals in the released-time seminary program.

2. The public schools with which the seminary program affiliates on a released-time basis may, by the very nature of their program(s), make it all but mandatory that the released-time program operate on an analogous basis if harmonious relationships are to continue.

3. In order for the students to be afforded the maximum opportunity to adjust their schedules to each school program, consistent scheduling concepts must exist.

IV. RESEARCH DESIGN

The initial phase of this study consisted of a review of the literature (1) to determine the nature and extent of various types of innovations in the school scheduling process and (2) to ascertain if any such projects were involved with any released-time programs. Visits were made to schools in California, Nevada, and Utah where innovations in the scheduling process were in operation and interviews were
held with the administrators of said schools.\textsuperscript{15} Visits were made to the L.D.S. Seminary adjacent to the high school in Roy, Utah, where a program of schedule modification has been in use for the past year. Interviews were held with the administrator, several of the teaching staff, and the seminary principal.

During a period of three years (1963–66), the Brigham Young University High School in Provo, Utah, has been involved in an extensive research and planning program preparatory to their venture into flexible scheduling. It was the privilege of the investigator to be assigned a major role in the development and implementation of that program.

Finally, suggestions or experience necessary for adjusting the released-time seminary program to flexible scheduling concepts were derived from (1) interviews, discussions and consultations with those in the field of released-time curriculum, (2) correspondence and interviews with public school teachers and administrators who have had experience with schedule modification programs, and (3) sixteen years of personal teaching experience in the released-time seminary program of the Church of Jesus Christ of Latter-day Saints.

V. DELIMITATIONS OF THE STUDY

This study was limited to a consideration of the adjustment(s) necessary to make the released-time seminary program of the Church of

\textsuperscript{15} Among the schools visited were: Brookhurst Junior High School, Anaheim, California; Roy Martin Junior High School, Las Vegas, Nevada; Valley High School, Las Vegas, Nevada; Virgin Valley High School, Mesquite, Nevada; Cedar City High School, Cedar City, Utah; Brigham Young University High School, Provo, Utah; Roy High School, Roy, Utah.
Jesus Christ of Latter-day Saints compatible with three public school schedule modification concepts. No attempt was made to establish a case either for or against any particular type of scheduling program, only as might be implied by its contribution in reaching the goals of the released-time program.

Further, the study was confined to the released-time seminary program since none of the other educational programs of the Church of Jesus Christ of Latter-day Saints had affiliation with the public school systems.

The adjustments and suggestions presented herein are proposals only, since the authority to determine and establish curriculum policy rests with the Department of Seminaries and Institutes of the Church of Jesus Christ of Latter-day Saints as approved by the Board of Education of said Church.

VI. DEFINITION OF TERMS

Released-time seminary program of the Church of Jesus Christ of Latter-day Saints -- A program sponsored by the Church of Jesus Christ of Latter-day Saints (Mormon) whereby, upon parental request, the public school is authorized by state and/or local law to release a student from its jurisdiction for one class period during the school day in order that said student may go to the adjacent seminary building (owned and staffed by the Church) and there receive religious instruction and training. In this study the program is referred to as the released-time seminary program or the released-time program.
Flexible scheduling -- Flexible scheduling refers to the organization of the school and the cycle of activity where classes in a particular subject vary in the frequency and spacing of their meetings and in their size, according to four elements: (1) the nature of the subject; (2) the ability and interest of the pupil; (3) the talents of the teacher; and (4) the type of instruction.\textsuperscript{16}

In common usage, flexible scheduling has also become an all-inclusive designation assigned to almost any school scheduling program which attempts to alter the traditionally rigid period structure of a school day. These vary in scope from a slight adjustment of the traditional schedule to the more complex and drastic daily reapportionment of time and reassignment of space to all students and teachers.

VII. OUTLINE OF THE STUDY

Report of this study has been organized in the following order:

Chapter I consists of a brief discussion of the philosophy which nurtured the concept of schedule modification, and an introduction to the scheduling concepts to be considered. It consists of a statement of the problem, the need of the study, the research design and the delimitations of the study, a definition of terms, and an outline of the study.

Chapter II presents a review of the literature concerning flexible scheduling programs with a brief synopsis of some of the innovations reported in this field.

Chapter III is a description of the period exchange or rotating period concept of scheduling with an evaluation of strengths and weaknesses as it pertains to the released-time program, and suggestions for adjusting the released-time program to the scheduling concept.

Chapter IV is a description of the modular concept of scheduling with an evaluation of this concept as it relates to the released-time program, and suggestions for adjusting the released-time program to function under this scheduling concept.

Chapter V describes the daily demand concept of scheduling and presents an evaluation of strengths and weaknesses as they pertain to the released-time program. Suggestions are given for the adjustment of the released-time program to this scheduling concept.

Chapter VI contains the summary of the findings of the study, the conclusions, and the recommendations.
CHAPTER II

REVIEW OF LITERATURE

A review of the literature revealed three things worthy of note with reference to this study: (1) the majority of the material published concerning scheduling modification has been published in the journals and periodicals of the educators. Very little has been published in book form. (2) By far the majority of the articles dealing with scheduling modification programs were published during the years 1962-63; and (3) no mention was made concerning a released-time program having been connected with any of the scheduling modification experiments.

The lack of published material does not, however, indicate a lack of interest in the matter of schedule modification. It should be taken into consideration that most of the current interest in these scheduling concepts arose as a result of the staff-utilization study of the commission appointed by the National Association of Secondary-School Principals. This commission was appointed on January 1, 1956, and the study lasted for a period of four and one-half years. As the commission began to report their study, with its associated projects, findings, and conclusions, articles began to appear in the educational journals and digests wherein the scheduling modification concepts were discussed. A few of these appeared in book form, but as previously noted, the majority

appeared in the professional periodicals. Of those books and articles
listed in the bibliography of this study, only one was published prior
to 1959, two after 1964, and over 46 per cent of them during 1962-63.
It was during this period that the experimental projects were making their
reports to the N.A.S.S.P. organization. These reports and critiques were
the leaven which brought about innovations which are now (1966) evident
in school districts referred to later in this study, as well as the
almost daily reports from the educational editors of newspapers and maga-
zines concerning the changing schools of our time. The released-time
seminary program of the Church of Jesus Christ of Latter-day Saints had
had but limited association with flexible scheduling programs and the
literature makes no mention of it. There is, however, much of interest
to education and educators contained in the literature available.

The case for change in the public schools of America was cham-
pioned by Dr. J. Lloyd Trump, associate secretary of the National Asso-
ciation of the Secondary-School Principals and he advocated the "flexi-
ble schedule" as a means by which change can be implemented.

A factor which seemed to have created much interest in the current
scheduling modification programs was the sharp increase in public school
population. It would be rare to find a school with adequate facilities

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2 These districts include those referred to in the footnotes and
discussions as well as those mentioned on page 12 of this study.

3 Trump and Baynham, op. cit.

4 J. Lloyd Trump, "Flexible Class Schedules," California Journal
of Secondary Education, 35:94-95, F. 60; and J. Lloyd Trump, "Flexible
to handle the student enrollment assigned to it. To cope with this problem, administrators have attempted to extend the school day, or otherwise alter present scheduling procedures, in order to handle increased enrollment with present facilities. For an example: an Ohio school district started the senior high school at 7:45 a.m. and was dismissed at 4:42 p.m.\textsuperscript{5} By staggering schedules in this manner, each school could use certain facilities when they were in the building alone, and them limit themselves to small class and group instruction during the periods of simultaneous occupancy of the building. A senior high school and a junior high school in Pennsylvania accomplished the same purpose by staggering their schedule between grades. In the senior high school there were nine periods during the day. The eleventh and twelfth grades attended periods one through seven, and the tenth grade went to school from periods three through nine. In the junior high building ten periods were held during the day, with the eighth and ninth grades going periods one through seven and the seventh grade attending periods four through ten.\textsuperscript{6}

There are those who proposed lengthening the school year, as well as the school day, in order that the school facilities could be utilized


more fully and that the professional staff could be better employed.  
Experiments have been conducted where only the class period is lengthened anywhere from 70 minute periods to a maximum of 105 minutes with meetings only three times per week.  
A San Antonio, Texas, school district registers its students for three two-hour periods per day. Each student has three courses he must finish in four and one-half months, for which he receives one credit each. He then registers for three more courses for the next half of the school year.  
Experiments have been made with double period scheduling, rotating schedules, and with a block plan and

block class concept. The Jefferson County Schools, Lakewood, Colorado, conducted a study to determine the effect of class size on student achievement. The findings were very informative in that, as far as could be determined, class size, in and of itself, had no effect upon student achievement. As might be expected, there are those who are very excited about such programs and others who are quite critical and pessimistic of that which is being done.

Another major contributing factor to the investigation of the scheduling modification programs has been an earnest desire on the part of the educators to provide better education for the students in their schools. The flexible schedule has been presented as a tool whereby the teaching process can be more adequately adapted to the individual needs of the student. The schedule modification program which, to this time


(1966), attracted more public attention than the others was the Stanford School Scheduling System, a program developed by Robert N. Bush and Dwight W. Allan of the College of Education of Stanford University. Different aspects of this scheduling system are discussed by the authors in various educational journals, but the most complete presentation of this concept is to be found in the previously noted work: "A New Design for High School Education: Assuming a Flexible Schedule." Others of their reports include a discussion on the need of schedule modification; some introductory steps which should be followed in the establishment of such a system; as well as some of the problems presented by a flexible schedule in high schools. In connection with

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18 This scheduling program is discussed in detail in Chapter IV of this study: "The Modular Scheduling Concept."


20 Ibid.


such a "modular concept," there has been much experimentation and discussion as to the most desirable length of the class period, and some interesting reports on such experiments are available.\textsuperscript{24}

In a later publication\textsuperscript{25} Professor Bush makes an appraisal of the new developments taking place in education and introduced his definition of the instructional technique, team teaching. This technique, discussed in connection with their "large group instruction concept,"\textsuperscript{26} received wide-spread acceptance and was reported to the National Association of Secondary-School Principals by Lloyd S. Michael.\textsuperscript{27} In a symposium report\textsuperscript{28} and other reports of the team teaching technique, there are


\textsuperscript{26}Robert N. Bush, Dwight W. Allen, \textit{op. cit.}, pp. 37, 47.


those who were favorably impressed,\textsuperscript{29} as well as some who considered
the program with a more apprehensive approach.\textsuperscript{30}

Another instructional concept to gain some acceptance was the
"non-graded" school. This concept has been applied to the high school\textsuperscript{31}
as well as to the elementary school\textsuperscript{32} with varying degrees of enthusiasm
and success.

Since the overall purpose of this study had to do with the
relationship of scheduling modification programs to the released-time
program, throughout the survey of the literature careful attention was
given to this particular type of scheduling problem. It should be noted
here that there is no mention made in the literature surveyed concerning
any type of released-time program being affiliated with any of the

\textsuperscript{29}(Report) \textit{The Bulletin of the National Association of Secondary-
School Principals}, 47:169, April, 1963; D. W. Beggs (Ed.), "Team Teaching:
An Effective Program for Senior High School," \textit{Illinois Education}, 53:108-
110, November, 1964; R. H. Johnson, et al., "Extensive Study of Team
Teaching, and Schedule Modification in Jefferson County, Colorado,
School District, R-1," \textit{The Bulletin of the National Association of

\textsuperscript{30}T. W. Weiss and M. S. Morris, "Critique of the Team Approach,"
Teaching the Answer?" \textit{School and Society}, 91:407-409, December 14,
1963; J. E. Moran, "Think Twice About Team Teaching," \textit{The Instructor},

\textsuperscript{31}Bartley Frank Brown, \textit{The Non-Graded High School} (Englwood
Cliffs, N.J., Prentice-Hall, 1963), p. 223; B. Frank Brown, "The Non-
B. Frank Brown, "The Non-Graded School," \textit{The Bulletin of the National

\textsuperscript{32}Ole Sand, "Non-Grading," \textit{The Bulletin of the National Association
schools who were experimenting with or making innovations in the area of schedule modification.

The literature indicates that the interest in change in our schools in America is not limited or concentrated in any particular region or area. The reports of innovation came from the north, south, east, and west, and were as vital in the rural school districts as they were in the urban districts. Few conclusions are drawn from all of the writing other than the fact that change in our schools is inevitable. Which way and how far are yet to be determined.
CHAPTER III

ADJUSTING THE RELEASED-TIME SEMINARY PROGRAM
TO THE PERIOD EXCHANGE CONCEPT OF SCHEDULING

I. DESCRIPTION OF THE CONCEPT

In all probability, the first modifications of the school schedule were undertaken because of circumstances which compelled the administrator to make a change for the day. In the one-room, one-teacher school, the teacher was the administrator and teacher combined, and there were times when it became necessary to alter the ordinary plan for the school day as to time spent with a particular class studying a particular course or lesson, or as to the sequence usually followed in the presentation of subjects of the students. These modifications were often made in order to adjust to the plans of the community or the wishes of the parents and, perhaps more often, just to break the monotony of the school day for the students and teacher. As long as prescribed subject matter was presented during the day or year, though there may have been some concern on the part of a few of the patrons, sequence of classes and length of time spent with each was a decision reserved for the school administrator and teacher.

For this study, the scheduling program which could be brought into existence merely by administrative decision, requiring only rearrangement of time allotments and sequences for established courses,
was referred to as a period exchange or rotating schedule. The schedules were devised according to the need of the particular school and were accomplished by following one of many patterns, some of which follow:

Even period exchange -- The most popular and common schedule used in the secondary school was the standard schedule of six classes per day, each meeting for approximately fifty to fifty-five minutes, the schedule repeating itself daily. Figure 1 represents such a schedule.

The simplest modification of this basic standard schedule was the even period exchange (see Figure 2). The only preparation necessary to put this schedule into effect was the decision of the administrator as to which time each period would meet. On Monday, first period met during the time usually allotted to first and second periods, and second period did not meet. On Tuesday third period met during the time allotted to third and fourth periods, and fourth period did not meet. Wednesday fifth period was dropped and sixth period met for the last two periods of the day. On Thursday third period was omitted and fourth period met during the time usually assigned to third and fourth periods. The only two classes which had not met during the week were those assigned to second and fifth periods; therefore, on Friday second period met during the first two periods of the day, and fifth period met during the last two periods, eliminating first and sixth periods. The schedule was repeated each week.

### Figure 1
Standard Schedule

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*Numbers in period blocks refer to class meeting patterns

### Figure 2
Even Period Exchange

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*Numbers in period blocks refer to class meeting patterns
The purpose of such scheduling was to allow each class one extended meeting period during the week, which was advantageous in the areas where there was a laboratory phase of the course involved. Such a schedule was undesirable in that it assumed that all classes would fit into a common pattern regardless of their instructional requirements. Further, by following such a schedule, each class forfeited daily contact even though there were five periods allotted to them. There were many courses of study where daily contact in shorter periods of time seemed to be more advantageous, to students and teachers alike, than the prolonged meeting once each week and the loss of one daily session.²

**Block scheduling** -- In block scheduling the subjects normally assigned to first and second periods alternated by the first period class using the entire block of time on Monday, Wednesday, and Friday, while the second period class used the time on Tuesday and Thursday. (Figure 3.) This pattern was repeated on a weekly basis. In some instances, in order to make a more equitable assignment of time, the schedule was altered every week. If the first period class had the double block of time on Monday, Wednesday, and Friday during the first week, the second period class was assigned those same blocks of time during the second week, and so on. They exchanged blocks of time on a daily basis, disregarding the weekend. More often, however, the schedule was followed on a semester basis, so that the time allotted was the same in both instances and was less confusing to the student.

²For example, typing courses, shorthand, vocal music, and classes using the audio-lingual approach to foreign languages.
Figure 3  
Straight Block Schedule

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*Numbers in period blocks refer to class meeting patterns*
The modified block plan, as represented in Figure 4, provided for equal meeting time for each class during the week, and eliminated the need of the semester schedule. The time was assigned to the first period class on Monday and Wednesday, to the second period class on Tuesday and Thursday, while on Friday, each class met for one period.\(^3\)

The principal advantage of the block schedule was the increased amount of instructional time, while the disadvantage again involved the lack of a daily meeting. This schedule was particularly difficult for the student who happened to be absent on a Tuesday or Thursday, since that meant he had opportunity to meet with his class but once during the week. The modified block schedule helped alleviate that situation.

**Sequence rotation** — In the sequence rotation schedule, the standard pattern of length of time and daily meetings of the classes was maintained. The only variation came from the fact that the rotation of periods changed each day as described in Figure 5. On Monday the classes followed their standard schedule beginning with the first period and progressing to the sixth period. On Tuesday the second period class meets first followed by the third, fourth, fifth, first, and sixth periods. Wednesday the third period was the first of the day followed by the fourth, fifth, first, second, and sixth periods, in that order. It will be noted that only the first five periods were involved in the rotation; the sixth period remained constant—the

\(^3\)The block plan and the modified block plan need not be limited to exchanges in the first two periods. This concept can be expanded to include other periods as well.
Figure 4
Modified Block Schedule

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*Numbers in period blocks refer to class meeting patterns

Figure 5
Standard Sequence Rotation

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*Numbers in period blocks refer to class meeting patterns
last period of the day. In most applications of the schedule, this plan was followed since the sixth period was reserved for classes in competitive athletics and other courses of such a nature that it was found advantageous to be able to extend them past the normal school day. Such classes as auto mechanics, woodworking, and laboratory classes were included in this category.

The advantage of such a schedule was found primarily in the fact that all classes shared both the good and bad of the school day. There were certain minor irritations and interruptions which, in the standard schedule, were the burden of one particular class. For example, the homeroom business was not always imposed upon the first period class, but was assumed by each class as it took its turn meeting during the first period of the day. Students who were chronically late in the morning were not always late to the same class, and the "after-lunch slump" was not felt by the same class each day. Variety was added to the school program and, though it was confusing to some who were not closely working with the rotation, the students and teachers had no problem remembering when their classes were to meet. The schedule was, for the most part, followed on a weekly basis; however, some schools using a more complicated sequence in their rotation carried the rotation on through the weekend and short holidays, reverting to the original beginning only after a prolonged semester break or special holiday vacation.4

4E. F. Clemmer, "Rotating Schedule at Claremont Junior High School," The Bulletin of the National Association of Secondary School Principals, 44:56-59, March, 1960. Other modifications are discussed in the same article.
Variations in sequence rotation -- It is apparent that the above example of sequence rotation (Figure 5) is but a very simple and uncomplicated pattern of many that were used. The only determining factor, as to the extent of the variations or modifications used, was the purpose for which the schedule was originally adopted. Some were used to merely break the monotony of the school day, and this could be brought about with a minimum of preplanning. Some were used to add an extra period to the school day, allowing for an expanded curricular offering. Other variations made allowance for early dismissal at the end of the week or made allowance for differences in the needs of students and teachers in particular courses. Anything was possible! Some of the variations used were:

Displaced rotation schedule -- The displaced rotation schedule was used as a means of scheduling an additional period or course into the normal school day without altering the length of the day. This was accomplished by reducing the number of instructional periods assigned to each course or class from five to four. Instructional time for the seventh period was scheduled during the periods taken from the other six classes. As represented in Figure 6, the displaced rotation schedule followed the standard sequence of periods on Monday. On Tuesday, however, period 7a displaced the first period and on Wednesday the second period was displaced by period 7b. Period 7c displaced the third period on Thursday and on Friday the fourth period class was displaced by period 7d. This allowed a total of four class periods
Figure 6
Displaced Rotation

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*Numbers in period blocks refer to class meeting patterns*
for each of seven subjects for a total of twenty-eight class periods. Since there were thirty periods available in the week the schedule in Figure 6 shows two X periods during periods five and six on Friday. The X periods were used for special activities or events throughout the week and were inserted into the schedule at any time that suited the purposes of the administration. They were used for assemblies, athletic contests, and/or early Friday dismissal. The advantage of such scheduling was the expanded curricular offering but it was at the expense of a daily meeting of each class.

Compressed rotation -- The compressed rotation schedule represented in Figure 7 was used to lengthen the instructional time allowed each class. Under this program, five periods are scheduled into the time normally allotted to six, but at the same time, six classes were scheduled. They rotated in numerical sequence through the schedule as follows: Monday periods one through five met, then on Tuesday period six met during the first period of the day and was followed by periods one, two, three, and four. Wednesday began with period five meeting during the first period of the day, followed by periods six, one, two, and three. This sequence was followed through Thursday and until the fourth period on Friday when period six met for the fourth time during the week. All six of the classes had four instructional periods during the week and there remained one X period to be used for whatever purpose was desired by the administration. Again, this period was inserted into the schedule at any desired place or left at the end of the week.
Figure 7
Compressed Rotation

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*Numbers in period blocks refer to class meeting patterns
The advantage of this schedule was the lengthened instructional time, but as before, it was accomplished by forfeiting the daily instructional time, since even though six courses were offered, only five of them met on any one day.

**Expanded rotation** — To allow each class the advantage of an extended instructional period each week, and at the same time retain the advantage of a daily meeting, the expanded rotation schedule was used. To accomplish this, the amount of time normally allotted to six periods under the standard schedule was divided into seven periods. By combining the idea of the displaced period with the added period in the schedule, it was possible to have one lengthened period each week. This schedule is represented in Figure 8. On Monday the first period class met during the first and second periods, and the rest of the classes met during their regular sequence. Tuesday the second period class met during the second and third periods. Wednesday the third period class met during third and fourth periods, and so on through the week, with the exception of the sixth period class which did not have the extended period.5

**Variable period length rotation** — The variable period length schedule was adopted so that the amount of time assigned to each period would vary, allowing some flexibility in both the instructional pattern and the scope of the lesson material presented.

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5For further extension of time, this program was also adapted to a regular seven-period day.
Figure 8
Expanded Rotation

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<td>6</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

*Numbers in period blocks refer to class meeting patterns*
The time designated to each period was determined by a study of the wishes of the staff, and many variations occurred. The example represented in Figure 9 assigned thirty minutes to periods one and two, fifty minutes to periods three and four, and seventy minutes each to periods five and six. This schedule did not prove too successful because it did not allow any variation in the different phases of a course. For example, fifth period always met for seventy minutes while second period met for only thirty minutes. It was impossible to accomplish as much in the course assigned to second period as could be accomplished in the ones assigned to fifth period.

The modification added to obviate this inequality was a sequence rotation in connection with the variable period length (see Figure 10). With this innovation, each class met at different times during the week and at the same time met for different lengths of time, some short, some of medium length, and some for long periods of time. This made it possible to adapt to the varying time requirements of the different phases of each course or lesson. The first period class, for example, met for thirty minutes on Monday, for seventy minutes on Tuesday, seventy minutes again on Wednesday, and for五十 minutes each on Thursday and Friday. The other courses followed similar rotation. The sequence rotation was continuous, not reverting to the standard sequence every Monday, again allowing for equitable time distribution among all classes.

In some instances the sixth period was allowed to remain constant and the other five periods participated in the rotation
**Figure 9**
Variable Period Length Rotation

<table>
<thead>
<tr>
<th>Day</th>
<th>Mon</th>
<th>Tues</th>
<th>Wed</th>
<th>Thur</th>
<th>Fri</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1*</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>30 min</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>30 min</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>50 min</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>50 min</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>70 min</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>70 min</td>
</tr>
</tbody>
</table>

*Numbers in period blocks refer to class meeting patterns

**Figure 10**
Variable Period Length Combined with the Sequence Rotation

<table>
<thead>
<tr>
<th>Day</th>
<th>Mon</th>
<th>Tues</th>
<th>Wed</th>
<th>Thur</th>
<th>Fri</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1*</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>30 min</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>30 min</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>1</td>
<td>30 min</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>50 min</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>70 min</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>70 min</td>
</tr>
</tbody>
</table>

*Numbers in period blocks refer to class meeting patterns
(see Figure 11). The scheduling pattern thus developed allowed certain activities to be scheduled during the seventy-minute sixth period that could best be handled at the end of the day; for example, physical education classes and/or activities such as competitive athletics. With only five periods in rotation, the sequence automatically began anew each Monday morning.

For a further modification of this scheduling plan, consider the schedule represented in Figure 12. There were six periods, including a thirty-minute lunch period, for a total of 360 minutes, as well as an "Early Bird" period (designated on the schedule as period X) for students who wished to pursue a more accelerated program. The X period was assigned fifty minutes for a total of 410 minutes in the day, beginning at 7:55 a.m. and ending at 3:15 p.m. Period X and third period were not included in the sequence rotation, but remained constant. Periods one, two, four, five, and six were rotated in a normal sequence pattern. Since but five classes were in rotation, it will be noted that the schedule repeated itself beginning each Monday morning.

The reason period X and third period were not included in the rotation is that period X was used for only a portion of the student-body, those who wished to add another course to their curriculum or who wished to have an extended lunch hour of one and a half hours.

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6The rotation patterns followed and explained in Figures 12 and 13 were those used by Cedar City High School, Cedar City, Utah, for the school year of 1964-65.
Figure 11
Variable Period Length
with Five Periods in Sequence Rotation

<table>
<thead>
<tr>
<th>Day</th>
<th>Mon</th>
<th>Tues</th>
<th>Wed</th>
<th>Thur</th>
<th>Fri</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pd.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1*</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>30 min.</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>30 min.</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>50 min.</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>50 min.</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>70 min.</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>70 min.</td>
</tr>
</tbody>
</table>

*Numbers in period blocks refer to class meeting patterns.

Figure 12
Variable Period Length
with Five Periods in Rotation & Two Periods Rigid

<table>
<thead>
<tr>
<th>M</th>
<th>T</th>
<th>W</th>
<th>Th</th>
<th>F</th>
<th>Time</th>
<th>Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>X*</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>7:55 - 8:45</td>
<td>50 min.</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>8:50 - 10:05</td>
<td>75 min.</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>1</td>
<td>10:10 - 11:00</td>
<td>50 min.</td>
</tr>
<tr>
<td>3*</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>11:05 - 12:30 or 11:00 - 12:30</td>
<td>85 min.</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>12:35 - 1:25</td>
<td>50 min.</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>1:30 - 2:20</td>
<td>50 min.</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>2:25 - 3:15</td>
<td>50 min.</td>
</tr>
</tbody>
</table>

*These periods do not rotate.
When a student registered for period X classes he was not required to take seven classes, but was permitted to do so if he chose.

Third period was the lunch hour, and for this reason was not included in the rotation pattern. It was divided, however, into a thirty-minute lunch period and a fifty-minute class period with a passing time allowance of five minutes, for a total of eighty-five minutes as assigned on the schedule. It will be noted in Figure 13 that half of the studentbody ate lunch for thirty minutes then proceeded to class, allowing lunchroom personnel approximately twenty minutes to prepare the lunchroom and food for the other half of the studentbody who had been in class for fifty minutes. Some students registered for period X and then used the time from 11:00 till 12:31 for part-time employment and on-the-job training programs in cooperation with local businessmen.

II. EVALUATION OF THE PERIOD EXCHANGE OR PERIOD ROTATION CONCEPT OF SCHEDULING AS PERTAINS TO THE RELEASED-TIME SEMINARY PROGRAM

Consideration of strengths. The following strengths were evident in the period exchange or period rotation concept of scheduling when studied from the standpoint of the released-time program:

1. Diversion on the part of the students. It seemed new and different to come to seminary at different times during the day and gave the students a break from the monotony of a daily routine.
Figure 13
Variable Period Length with Split Period
For Simultaneous Lunch and Class Activity

Period X. 7:55 - 8:45 (50 min) Not required*

1. 8:50 - 10:05 (75 min)
2. 10:10 - 11:00 (50 min)
3. 11:05 - 11:35
   11:40 - 12:30 (50 min)
   11:00 - 11:55 (50 min)
   12:00 - 12:30 (30 min)

4. 12:35 - 1:25 (50 min)
5. 1:30 - 2:20 (50 min)
6. 2:25 - 3:15 (50 min)

*Students registered for Period X to take advantage of seven class offerings during the day, or in order to have unscheduled time from 11:00 - 12:30.
2. Teachers had opportunity to work with each class at the time when they and the students were presumably most efficient. The same class did not always come at the close of the day, or just after lunch, or at times when the teachers were "let down." The fact that each class met at a different hour each day, and often for variable lengths of time, tended to keep teachers and students more alert.

3. Teachers arranged their testing situations for the early morning classes and thereby capitalized on the freshness and alertness of students.

4. When possible, heavier work loads were usually planned for the morning sessions with study time or audio-visual presentations arranged for afternoon classes.

5. Assemblies, usually held during the last period of the day, did not disturb any one class more than any other since all classes had their turn at that hour of the day.

6. Minor interruptions and irritations of the school day, viz., the mechanics of homeroom business, were not always imposed on the same group or class.

7. Students who were habitually late in the morning did not always report late to the same class.

Consideration of weaknesses. When the period exchange or rotation schedule was considered as it would effect the released-time program, the following weaknesses were evident:
1. Loss of daily contact with students. In order to follow many of the programs studied, it was necessary to schedule students for longer periods of time when the classes met, but this was done at the expense of a daily meeting schedule. In most instances it meant the loss of one class period per week.

2. Variable length classes. It was difficult for most teachers to adjust to the variable length classes and still maintain motivation among the students. Much of the subject matter presented in the lesson outlines of the released-time program was, by the very nature of the material, best suited to a chronological presentation. Difficulty was often experienced in fitting the lessons into the shorter class periods in such a way as not to detract from the objectives of the lesson. The opposite was also true: when a double period came in the schedule it was difficult to expand the presentation to cover the time. Teachers felt that the interest span of the students was not of sufficient length to make two presentations practical in one class period.

3. The programs were not flexible. Once the schedule rotation was established, it was rigid and constant. Teachers and students were forced into long or short periods of time (with a variable length period program), regardless of their needs.
III. PROPOSED ADJUSTMENTS OF THE RELEASED-TIME PROGRAM

TO THE PERIOD EXCHANGE OR ROTATION CONCEPT OF SCHEDULING

The extent to which the released-time program must be adjusted in order to function under a period exchange or rotation scheduling program is dependent, in large measure, upon the variation of the concept to be used.

Sequence rotation. When the program is a straight sequence rotation, expanded or the displaced rotation schedule described above, there need be little, if any adjustment on the part of the released-time program. Testing sessions, audio-visual presentations, study periods, and work loads can be arranged to coincide with the most opportune time of day as far as teachers and students are concerned. The classes will meet at different times each day, but will meet for the same amount of time.

Variable length classes. Any time the length of the class period is altered, either by a compressed or expanded rotation program, a period exchange or block schedule, or by any of the many possible combinations inherent in the variable period length concept, care must be exercised in planning the lesson to fit the instructional time available.

1. Shorter classes. Though efficient use of time must always be uppermost in the mind of the teacher, these efforts must be increased many fold to compensate for the loss of instructional time. Some areas of concern: classes must begin on time and classroom procedures can be streamlined. Keep devotional exercises within a limited time allotment. Students can be trained
to respond quickly and efficiently to such things as seating charts and roll-taking devices, and the reporting of assignments completed.

In the preparation and presentation of lessons, caution must be exercised that the objective of the lesson (or class) is reached within the time allotted. All effort must be concentrated upon the attainment of a single objective.

2. Double period or extra-length periods. When the instructional time is extended beyond the normal class length, there is the ever-present danger of boredom on the part of the student. The surest safeguard against this condition will be adequate preparation on the part of the teacher, coupled with variety in methodology and technique in the presentation of the material. Teachers involved with extra-length periods failed to motivate students when a mere inflation of the regular class procedure was attempted. For example, during a fifty-minute class period, a teacher planned for thirty minutes of class participation and allowed twenty minutes for research into the assignment. When the same teacher was assigned a class for seventy-five minutes he attempted to imitate the above situation and planned a forty-five minute class participation activity with thirty minutes reserved for research and study. He failed in the attempt, primarily because the student interest span was not

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7For suggestions for variety into the approach to lesson presentations consult the following: Paul H. Dunn, You Too Can Teach (Salt Lake City: Bookcraft Inc., 1962); and Charles R. Hobbs, Teaching With New Techniques (Salt Lake City: Deseret Book Company, 1965).
capable of that amount of concentrated effort and they became tired, bored and listless. They were not challenged. On another day, however, a variety of techniques and methods produced very desirable results.

A concept could be introduced or a unit of study opened by use of a filmstrip presentation followed by a quick test form which would check on student comprehension. (This could also be expanded into a unit pre-test.) While the teacher checks the test, the students could be allowed a five-minute break. The test results could be discussed, the new assignment given and the remainder of the period utilized in supervised study. The extent of variety will be limited only by the ingenuity of the teacher. Schedules involving class period up to 105 minutes in length have been successfully used, proving the possibility of motivating students through imaginative planning.  

**Buildings and physical facilities.** None of the scheduling patterns described and illustrated in this chapter involve any additional resources in themselves. They have been successfully implemented in schools where there existed the most limited physical facilities and where the schools were governed by most rigorous limits of habitual time schedules. There may be alterations in facilities which would enhance any one of the programs herein discussed, but they are not essential.

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The teaching staff. Since each teacher was assigned to specific classes, and these classes (once the rotation sequence was established) met in an unchanging pattern, there was no conflict with teacher assignments or concern with teacher load as a result of the scheduling program.
CHAPTER IV

ADJUSTING THE RELEASED-TIME SEMINARY PROGRAM

TO THE MODULAR CONCEPT OF SCHEDULING

I. BACKGROUND

It is difficult to determine when an idea was born, but during a period of seven years (1959-1966) Robert N. Bush, professor of education, and Dwight W. Allen, assistant professor of education, at Stanford University, were instrumental in the pursuit of a study sponsored by that university, which concerned itself with a new approach to secondary education.¹ Though many contributed to the study, Ford Foundation, through substantial grants from its fund for the advancement of education, made the comprehensive study possible. The resultant formula came to be known as the Stanford School Scheduling System. The program found acceptance in the western United States, particularly among educators who had a disposition to work with the changing trends in the educational process.² As is true with most adaptations of a program, each of the schools involved with the Stanford School Scheduling System had some things in common in the manner in which the schedule


²High schools that have used the Stanford School Scheduling System are: Homestead High School, Fremont Union High School District, Sunnyvale, California; Lincoln High School, Lincoln Unified School District, Stockton, California; John Marshall High School, Portland Public Schools, Portland, Oregon; Virgin Valley High School, Mesquite, Nevada; Valley High School and Roy Martin Junior High School, Las Vegas, Nevada; Roy High School, Roy, Utah.
was implemented and administered. However, many variations were also found. Inasmuch as the fundamental concept is contained in the program developed by Professors Bush and Allen, that program was used as the basis for this study.

II. DEFINITION OF TERMS

**Module** -- A module is a unit of measure, be it time, size, or area.

**Schedule module** -- The schedule module is that period of time during which the master schedule does not repeat itself. In the traditional school, this is one day. In the Stanford School Scheduling System, this could be one week, two weeks, six weeks, or longer. (One week of five days was used most commonly.)

**Modular unit of time** -- The largest amount of time, the multiple of which will give period lengths desired for any type of instruction. If periods of 40, 60, or 120 minutes were desired, the appropriate time module was 20 minutes. In curriculum planning and scheduling, this time had to be precise.

**Modular unit of class size** -- The minimum class size desired for any instructional purpose. It was not necessary that this number be exact. An approximation of number desired was permissible.\(^3\)

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\(^3\)Class size modules can be of any size desired by the staff. It was found desirable to select as large a module as possible in order to curtail the complexity of scheduling. Smaller class modules increased the flexibility of the program; however, they also increased the complexity of the scheduling process.
Total curricular area -- The total curricular area was determined by multiplying the "total enrollment" by the "total time available."

Course structure -- The course structure was defined as the design of the course. This indicated how students and instructors in a given course met during a time cycle (schedule module), and consisted of:

1. Phases. Each phase was a subdivision of the course structure for which students, instructors, and period length remained constant.

   2. Sections. Each section was a subdivision of a phase. The number of sections in a phase was determined by dividing the total course enrollment by the permissible size of sections in each phase.

III. DESCRIPTION OF THE CONCEPT

Basic assumptions. The first step of the scheduling program here considered was to make explicit the basic assumptions upon which the program rested. They were seven in number.

   1. High school was the period of schooling typically included in grades 7 to 12. In the nineteenth century and during the early years of the twentieth century, the American high school was considered to be a four-year program (including grades 9 through 12) with an elementary program of eight years duration. During the second decade of the twentieth century, secondary education was moved back two years. Even though
this structure had not become a nationwide policy, the trend ran strongly in that direction.

2. All students should receive continuous, rigorous study in breadth and depth in all basic subject-matter fields throughout the six secondary school grades. With the possible exception of English and physical education, traditional practice had not encouraged a continuity of study over the six-year span of secondary education. For this program it was assumed that most students should continue to build and strengthen their understandings and competence in: (a) the visual, performing, and practical arts (viz., industrial arts and homemaking, music, painting, crafts, sculpture, dramatics, etc.); (b) languages, both English and foreign; (c) mathematics; (d) natural science; (e) physical education and health; and (f) the social sciences.

Each subject area was divided into courses which were developed and presented on the concept level complementary to the individual student's desires and capabilities, and in such a manner as to challenge and develop individual potential and talents by appropriate variations in breadth and depth of study. Individualizing the curriculum was accomplished by including three types of curricular elements for all students in each subject area to be studied: (a) common curricular elements, or that definable standard of achievement which all students are expected to master, (b) the alternative curricular elements, which were defined as those elements, any one or several of which would be appropriate for any one student based upon the interest and ability of the student, and (c) the individualized curricular elements. In this
area, the selection of the material was decided by each student and the
process of individualization revolved around joint decisions of the
teacher and the student as to the means of attack, the depth of the in-
vestigation, and the appropriate extent of the study. All students
were expected to have a part of their study in each subject area devoted
to an individualized curriculum.

3. It was possible to identify, in each subject area, several
groups of students whose needs were sufficiently distinct to require a
discrete program of studies. It was recognized that while all students
should study continuously in all the above noted subject areas, the
proportion of time devoted to a particular subject, the distribution
of that time, and the nature of the content selected from that field
was to vary according to the needs of each individual and to the social
demands that his goals, aspirations, abilities, and circumstances
required.\textsuperscript{4} Though many grouping categories have been tried, the one
used in the Stanford School Scheduling System consisted of the follow-
ing: (a) limited ability, (b) comprehensive--low interest, (c) com-pre-
prehensive--high interest, (d) subject-talented--low interest, (e) subject-
talented--high interest, (f) gifted, and (g) remedial.

4. Each subject, when properly taught, was to include four basic
types of instruction. Some instruction was found to be more effective
in large groups (LG); while other kinds of teaching required small-
group instruction (SG). Certain topics and pupils required a considerable

\textsuperscript{4}Bush and Allen, op. cit., p. 12.
amount of independent and individual instruction and study (IS), and all subjects required special laboratory instruction (LAB). Appropriate combinations of different types of instruction necessarily varied according to both subject-matter areas and groupings of students.

5. Adequate instruction in each subject-matter field required senior teachers who were both well trained in their subject-matter fields and highly skilled in teaching, assisted by less highly trained members of the instructional and supporting staff. This was a matter of wise staff utilization because teachers were used in the fields where they were well prepared in contrast to the widely used practice of assigning teachers to perform in fields where they were not fully competent. Some teachers had considerable depth and mastery in certain areas of their field, as well as a difference in their professional commitment and interest. Failure to recognize these differences resulted in a great waste of human energy—both the teachers' and the students'. Further waste was evidenced by the practice of using professionally trained personnel for duties which did not require such training, and could have been handled by clerical or paraprofessional personnel.

As teachers in any particular domain of knowledge developed standards and procedures for identifying and assessing levels of competence, better utilization of diverse talents would result. From this there emerged at least three levels of teacher status: (a) the highly talented and experienced senior teacher, (b) the competent staff teacher of lesser experience and training, and (c) the intern or beginning teacher.
6. Class size, length of class meeting, and the number and spacing of classes ought to vary according to the nature and aim of the subject, the type of instruction, the level of ability and interest of the pupils, and the aim and purpose of the teaching. In the traditional school program, no provision has been made for the divergent talents and abilities of the students. A pupil, gifted or dull, was required to take mathematics for fifty-five minutes daily in a class of thirty students for three full years during the full six years of secondary education. A similar requirement, varying in the number of semesters and years, was true of almost all other subject.

In the Stanford School Scheduling System the nature of the subject was considered. Questions were raised such as: is primary emphasis upon skill or concept development? Should emphasis be placed on short periods of practice or on longer concentrated periods of study? (For example, in science the need is for longer period of time for laboratory work, as contrasted with vocal music training in which there was no need for an allotment of time for the preparation of equipment, and the maximum benefit for one session could be obtained in one-half hour or less.) Should the total time required to accomplish the purpose of the course be ninety minutes or three hundred minutes per week?

Upon consideration of these and other questions, it was determined that each subject-matter field was to have a flexible structure for its teaching—one that was appropriate for the subject, for the teachers, and for the learners. This structural variation recognized the fact that pupils differ widely in their abilities, in their capa-
cities, and in the pace at which they learn. It was discovered that some could profitably use large blocks of time working relatively independently; while others needed to be directed more closely. Certain students even needed constant supervision and, in terms of their attention span and interest, required rather short periods of study with more frequent class meetings.

7. It was possible to obtain scheduling assistance through the use of data-processing equipment in order to implement a large degree of schedule flexibility. The formation of the master schedule was accomplished by the use of data-processing equipment. Basic scheduling information was listed on cards and then processed by high-speed computers. Relevant data included: (a) the program of studies that each pupil selected, in consultation with the professional staff; (b) teachers' names along with their appropriate assignment; (c) rooms, their use and capacity; and (d) other special data. Class lists, teacher assignments, pupil and room schedules, as well as the master schedule were generated by a machine that implemented carefully prescribed educational policies.5

Curriculum planning concept. Before any scheduling problems or programs could be considered, it was necessary to determine the curriculum and consider some of the limitations under which the school had to

function. The planning of curriculum required the selection of alternatives. Scarce resources—time, facilities, teachers, and students—needed to be allocated, and all subject offerings were in competition for these resources. Traditionally, the reasoning by which the allocation of such resources were controlled was dictated by existing buildings, customs of the school and the departments therein, traditions of the community, and even legal requirements which had to be honored.

The first consideration, therefore, was to distinguish between those limitations about which nothing could be done and those which could be overcome. It was determined that alternatives to traditional course structure, class sizes, the use of staff, number and spacing of classes, total time which should be allocated to any one class, or even the necessity of a daily schedule, could be considered.

After due study and consideration, the following concepts and procedures were developed and used in the curriculum planning process:

1. The concept of curriculum as a function of area. The entire curriculum was considered as an "area" which had to be scheduled. This "area" included everything that had to be accomplished by all of the students and staff involved, within the limits of time which were specified. Graphically this concept was represented by showing a rectangle whose horizontal dimension represented the enrollment and the vertical dimension represented the length of time in the schedule module. The enclosed area was designated as the "total curricular area" and was available for scheduling. Figure 14 describes this "area," assuming a weekly schedule.

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6 Ibid., p. 20.
Area of Curriculum: Assuming a Weekly Schedule Module

Figure 14

--- 300 Students ---

Monday
Tuesday
Wednesday
Thursday
Friday
2. **Allocation of curriculum area to subject fields.** In planning the curriculum, the total curricular area was available for whatever purposes desired by the administration and staff. Decisions had to be made as to what claims would be made upon the time of all students and staff. Figure 15 represents one type of allocation. There must be time allotted for lunch each day, the faculty and staff were required to meet in groups or as a whole for planning, and individual study time for the students had to be considered. Having made provision for these time-consuming activities, the remainder of the curricular area was available for direct instructional purposes.

The allocation of the total modules to each subject-matter field was determined only after considerable planning between staff members and experts in the field of curriculum planning. The decisions for the assigning of time were based upon the requirements imposed upon the department, consideration of the ability of the student population, customs, and the wishes and desires of the department itself as to what it wanted to offer. Figure 16 represents, graphically, the appearance of the curricular area once these decisions were made.\(^7\)

After the allocation of time was made to each subject, it was then necessary for the department to formulate a course design.\(^8\) This was accomplished by using factors similar to those used in allocating time and students to the curricular area.

\(^7\)It will be noted that the areas of instruction are those presented in the basic assumption number two on page 54.

\(^8\)The subject refers to a general area and the course refers to a portion of the subject area; for example, English was the subject and American Literature was the course.
Figure 15
Allocation of Time to the Curricular Area
Number of Students

<table>
<thead>
<tr>
<th>Lunch</th>
<th>Faculty Meetings</th>
<th>Independent Study</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Available for</td>
</tr>
<tr>
<td></td>
<td></td>
<td>classroom instruction</td>
</tr>
</tbody>
</table>

Figure 16
Assignment of Subjects to Instructional Area
Number of Students

<table>
<thead>
<tr>
<th>Lunch</th>
<th>Faculty Meetings</th>
<th>Independent Study</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The Arts</td>
<td>English</td>
</tr>
<tr>
<td></td>
<td>Foreign Languages</td>
<td>Mathematics</td>
</tr>
<tr>
<td></td>
<td>Natural Sciences</td>
<td>Physical Education</td>
</tr>
<tr>
<td></td>
<td>Social Sciences</td>
<td>Guidance</td>
</tr>
</tbody>
</table>
3. The concept of modular units in curriculum planning. The curriculum, conceived as an "area" for scheduling, was made up of sub-parts called modular units, which were derived from units of time, class size and course structure. As defined above, the horizontal dimension represented the smallest number of students desired for any instructional purpose, and the vertical dimension represented the largest amount of time, multiples of which gave the desired-period lengths that were to be used for instructional purposes. This concept is described in Figure 17. One modular unit consists of a time dimension (or time module) of thirty minutes and a student dimension (or student module) of fifteen students. This little "building block" became the graphic basis for representing the concept in visual form. A wide variety of structures were possible, all of them being multiples of the basic modular unit, as further described in Figure 17. There were many other basic modular units available merely by changing the meaning of the vertical and/or horizontal dimension of the "building block."  

An example with specifications and definitions. After the curricular area had been divided among the subject fields, it was necessary to determine that amount of time which was to be allocated to each of

---

9The size of the modular unit depended greatly upon the administration and staff of each school and their needs. Generally the time module consisted of lengths of time from 15 to 22 minutes. In the example cited, an 18-minute module was assumed. Roy High School in Roy, Utah, used such a module.
Figure 17
Modular Units Used in Curriculum Planning

15 students

30 mins.

30 students

1 hour

60 students

30 mins.

150 students

2 hours

300 students

section 1

section 2
the seven subjects discussed in the basic assumptions.\textsuperscript{10} Certain
decisions were necessary in order that a basic framework for the distribu-
tion of time might be formulated.

The example which follows was based on a six-year high school
with a student population of 1,400. It was determined that the \textit{time
module} would be eighteen minutes with a total of twenty-four periods in
the school day (8:00 a.m. to 3:10 p.m.). The total curricular area
consisted of 120 periods within a \textit{schedule module} of five days. Since
there were some activities which would detract from the classroom time
of each day (viz., meetings of the staff and faculty, lunch periods, and
guidance programs), it was necessary to determine the total time which
was available for instructional purposes. Allowing two periods for lunch,
two periods for guidance, and three periods for staff and faculty meet-
ings (daily), there were thirty-five periods each week which were deducted
from the total time available, leaving eighty-five periods per week for
instructional purposes.

Another basic assumption of the program indicated that there was
to be an amount of time allowed each student for independent study (IS).\textsuperscript{11}
The amount of time assigned to each student was varied according to the
need and ability of the student, but for a basis upon which to work and
to allow greater flexibility and ease in scheduling, the amount of IS
time was determined at twenty per cent of the total time available.
Therefore, of the 510 periods available for instruction, 102 were re-
served for individual pursuit.

\textsuperscript{10} Assumption number 2, p. 54. \textsuperscript{11} Assumption number 4, p. 55.
The next step in the development of the scheduling program was to determine the minimum requirements for each subject area and distribute them over the six years of the high school curriculum. Using criteria developed by trained curriculum planners, in conjunction with experienced members of each departmental staff, these requirements were established. Each subject area was assigned forty-three periods of required study each year, making a total of 301 periods of required courses in the six-year program. By subtracting the total required courses (301) from the total periods available for direct instruction (510), there were 209 periods remaining available for independent study and concentration.\(^{12}\) Having determined that 102 periods were to be reserved for independent study (page 65), the remaining 107 periods were allotted to the area of concentration. A summary of these decisions and specifications appears in Figure 18.

Once the total time was allocated to each department, the next decision had to do with the distribution of the time of each subject over the six grade levels. It was necessary for departmental specialists to (1) define objectives for required courses at each grade level, (2) design a course structure to achieve those objectives, (3) assign a minimum time requirement to each course sufficient to achieve the above objectives, and (4) decide a predictable optimal time allotment for each grade. (This was but the minimum time requirement for each subject.) In addition to this, each department planned time for

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\(^{12}\) Concentration was defined as time allowed the student, beyond the IS time, for the purpose of increasing his knowledge and/or skills in areas of individual interest and/or need.
Figure 18

Summary of Specifications and Definitions

1. Six-year high school
   (grades 7-12) . . . . . . . . . . . . . . . 1,400 students

2. Smallest number of students to be scheduled
   for any group in any subject
   (defined as one student module) . . . . . . . . 15 students

3. Length of instructional periods
   to be scheduled
   (defined as one time module)* . . . . . . . . . . . . . . . . 18 minutes

4. Length of school day
   (8:00 a.m. to 3:10 p.m.) . . . . . . . . . . . . . . . . 24 periods

5. Number of days before
   schedule repeats itself
   (defined as the schedule module) . . . . . . . . . . . . . . . 5 days

6. Periods reserved for other than
   classroom instruction . . . . . . . . . . . . . . . 25 periods
   a. faculty, departmental
      meetings, etc.
      (three periods daily). . . 15
   b. lunch
      (two periods daily) . . . . 10
      \[ \frac{25 \text{ periods}}{} \]

7. Guidance
   (two periods daily) . . . . . . . . . . . . . . . 10 periods

8. Periods remaining for
   instruction per week
   (120 minus 35) . . . . . . . . . . . . . . . 85 periods

9. Periods reserved for student
   independent study (IS) . . . . . . . . . . . . . . . . 17 periods

10. Net time to be scheduled for classroom
    instruction for each student per week
    (85 minus 17) . . . . . . . . . . . . . . . 68 periods

*Classes must be scheduled for more than one period
concentration and individual study as elected by the student so that each student, following this basic outline, had opportunity to make use of the total number of periods available for instructional purposes.

Figure 19 illustrates one possible basic framework assuming the definitions and specifications herein presented. The figures on the chart represent the number of eighteen-minute periods per week which were required. The totals in the right-hand column and on the bottom line of the chart were taken from the specifications shown in Figure 18.

It will be noted in Figure 19 that as the student progressed through high school, the amount of required time at each grade level decreased (except in the case of Social Studies) and the amount of IS time as well as time available for concentration increased. This was programmed into the schedule on the premise that as a student achieved understanding of the basic philosophies and skills of the curriculum, he also gained a measure of maturity as well as a desire to involve himself more deeply into the pursuit of those areas where his greatest interest was centered. Time was thus provided for such elective areas of study and research.

It will also be noted that the time assigned to each grade level by each department or subject area was equal to the total time decided upon in the specifications. Hence, the total number of periods required for each of the six grade levels (301) plus the periods available for concentration (107) were equal to the total number of periods available for classroom instruction (6 x 68 or 408). The total periods required at each grade level, plus the IS and time allowed for concentration,
### Figure 19

**Possible Basic Framework Decision**

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Mathematics</th>
<th>Science</th>
<th>Social Studies</th>
<th>English</th>
<th>Foreign Language</th>
<th>Bus. Ed. Practical, Visual, Performing Arts</th>
<th>Physical Education</th>
<th>Requirements at each grade level</th>
<th>Total periods for independent study (20% of total time)</th>
<th>Total periods for instruction (Figure 18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>10</td>
<td>7</td>
<td>7</td>
<td>9</td>
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<td>5</td>
<td>3</td>
<td>4</td>
<td>33</td>
<td>28</td>
<td>24</td>
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<tr>
<td><strong>Total minimum requirements</strong></td>
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<td><strong>43</strong></td>
<td><strong>43</strong></td>
<td><strong>43</strong></td>
<td><strong>43</strong></td>
<td><strong>43</strong></td>
<td><strong>43</strong></td>
<td><strong>301</strong></td>
<td><strong>107</strong></td>
<td><strong>102</strong></td>
</tr>
</tbody>
</table>

All times shown are the number of 18-minute periods per week required.
were equal to the total number of periods available for classroom instruction each week (85).

Course structure concept. After the basic framework decisions were completed, the departments then assigned time to each course according to departmental decisions as to the amount of time necessary to achieve the objectives of the particular course. In a school following a traditional schedule, a class would meet for five class periods of fifty to fifty-five minutes per week for a total of 250-275 minutes of instruction. Assuming a course with an enrollment of 270 students in a traditional program, they would have been assigned to meet in nine sections or classes, for a total of five periods per week. Under the modular scheduling system, this time would be equivalent to three eighteen-minute modules or periods each day, of fifteen modules per week, for a total of 270 minutes (less five minutes each day for passing time). Such an arrangement was desirable but impractical since, it will be remembered, it was necessary to allow twenty per cent of the total time for IS time and also for tolerance in the computing of the master schedule. Therefore, the allotted time was reduced by twenty per cent leaving a total of 226 minutes. The time module being used in the schedule was eighteen minutes; therefore, the nearest multiple would be thirteen modules for a total of 234 minutes per week, less five minutes per day passing time. The thirteen modules or periods needed could have been requested in a number of varying combinations, according to the desires of the instructor involved. It might have been possible to have scheduled the students all at one time for the
thirteen periods in one day and therewith be finished. But it was more desirable and more in keeping with the pattern of the other courses of the school to meet the students on a daily basis. This arrangement necessitated class meetings of variable length. The type of meetings, size, and frequency would depend, in large measure, upon the physical facilities and staff of the department.

Again referring to the basic assumptions of the program, it was deemed desirable that each student should participate in four basic types of instruction.¹³ A few possible combinations of time which would facilitate the implementation of such a program were taken into consideration. Figure 20 represents a structure that allowed the staff to meet all 270 students at one time for two periods during the week. For three meetings, the group was divided into nine sections of thirty students each, and would convene for three periods or fifty-four minutes less the allowed passing time. The third phase of the course structure called for the class to be divided into eighteen small sections of fifteen students each and they met in small group discussions for two periods once during the week. This course was divided into three phases.

A five-phase course structure with an enrollment of 270 students, meeting for a total of thirteen periods per week, is represented in Figure 21. Again all of the students were scheduled to meet together for two periods during the week in Phase A of the course. This was for the purpose of presenting the concept of the lesson, listening to guest

¹³Assumption number 4, p. 55
Figure 20
Three Phase Course Structure
270 students

Phase A: All students meet for 2 periods once during the week.
Phase B: Students meet in sections of 30 students 3 times during the week. Each meeting is for 3 periods.
Phase C: Students are divided into sections of 15 and meet once during the week for 2 periods.

module -- 15 students
18 minutes

Figure 21
Five Phase Course Structure
270 students

Phase A: 270 students meet together once during the week for 2 periods.
Phase B: 2 sections of 135 students meet once during the week for 2 periods.
Phase C: 6 sections of 45 students meet once during the week for 2 periods.
Phase D: 9 sections of 30 students meet twice during the week, once for 3 periods and once for 2 periods.
Phase E: 18 sections of 15 students meet once during the week for 2 periods.

module -- 15 students
18 minutes
lecturers, watching visual-aid presentations, testing, or any other activity which could be best accomplished in such a group. Phase B of the course had the students divided into two sections of 135 students each; they met for another two periods during the week. Phase D divided the class into nine sections of thirty students each and they met at two different times during the schedule module, once for three periods and the second time for two periods, for a total of five periods in Phase D activity. The course planners felt it desirable to meet the students in small group activity; therefore, eighteen sections of fifteen students each were scheduled to meet for two periods. This constituted Phase E of the course structure. It will be noted that each student was scheduled to meet six times with sections to which he was assigned, making it necessary for two of these meetings to occur on one day in order to accomplish this during the schedule module of five days. It was found to be a common practice in the Stanford School Scheduling System that such scheduling was permitted. Many departments found it very beneficial, for instance, to meet with the entire student enrollment in Phase A of the course, and then sometime during that same day meet with the students in the small groups scheduled in Phase E of the course. The number of small groups scheduled and the frequency of their meeting was determined by the availability of the staff and facilities to accommodate such a program.

Figure 22 represents another course structure of a class of 270 students scheduled into a five-phase program meeting for a total of thirteen periods each week. Phases A, B, and C were scheduled to meet
Figure 22
Five Phase Course Structure

270 students

Phase A: 2 sections of 135 students meeting once per week for 3 periods

Phase B: 3 sections of 90 students meeting once per week for 3 periods

Phase C: 9 sections of 30 students meeting once per week for 2 periods

Phase D: 6 sections of 45 students meeting once per week for 2 periods

Phase E: 18 sections of 15 students meeting once per week for 2 periods

module — 15 students
18 minutes
for three periods each; however, the sections varied in number and size. Two sections of 135 students each met in Phase A, while in Phase B the sections numbered three with ninety students in each. For the third three-period meeting, the sections were increased to nine with thirty students in each section. Phases D and E of the course met for two periods each in sections of forty-five and fifteen students respectively. On this five-phase structure it was possible to schedule the sections in such a manner that one section met each day, allowing the staff the advantage of daily contact with the student.

The three courses outlined above illustrate the possibility of structuring variable approaches to meet almost any situation which might arise in planning an instructional program for a course. Such course structures exploit the design of the system. The whole program can be simplified, however, when staff and facilities are limited. Such a simplified course structure is represented in Figure 23. A two-phase course is here described, wherein the 270 students were grouped in sections of thirty students each and met five times during the week. Phase A of the course called for three meetings of three periods each and they met twice during the week. This structure presents an uncomplicated approach and one that could be handled by a minimum staff and limited facilities. For that reason it was used as a basis for the remainder of the example here presented.
Figure 23
Two Phase Course Structure

270 students

Phase A: 9 sections of 30 students meeting 3 times during the week for 3 periods

Phase B: 9 sections of 30 students meeting twice during the week for 2 periods

module -- 15 students
18 minutes
IV. EVALUATION OF THE MODULAR CONCEPT OF SCHEDULING

AS PERTAINS TO THE RELEASED-TIME PROGRAM

Consideration of strengths. Administrators, teachers, and students involved in this scheduling program were agreed that there were many strengths in the program that have already come to the fore, and perhaps many more that may yet be validated. Strengths that were apparent and were or could be beneficial to the released-time program are discussed below:

1. The program made allowances for individual differences in the students by making it possible for the departmental staff to structure their courses to accommodate these differences.

2. Time was provided the students for the pursuit of elective courses and areas. During the unstructured IS and concentration time, the students had ample opportunity to participate in the released-time program. (It will be noted in Figure 19, page 69, that on the ninth-grade level there was a total of thirty periods allowed for the areas of IS and concentration. This amount of time increased to a total of fifty-two periods at the twelfth-grade level. The average released-time course would not exceed fifteen periods per week on the basis under consideration.) In the traditional scheduling program, required courses often make the schedule so unwieldy and "tight" that students are often forced out of elective areas such as the released-time program.

3. More adequate use of physical facilities was made possible since students had a greater choice of possibilities in the
schedule. The scheduling of smaller sections in the course aided in this respect.

4. More time was made available for individual counseling. The administration and staff of the released-time program adjacent to the Roy High School in Roy, Utah, noted that very often students came to the seminary building during their IS time. They made appointments with the teachers during the periods in which the teachers were not scheduled. As a result, from fifty to seventy-five per cent of the teacher's unscheduled time was spent in individual counseling situations with their students.

5. There was greater variety in the class. Each class seemed to be "new" and different. The fact that the class met at different times of the day on differing days, and that the students did not come to the class from the same class every day seemed to have a good effect psychologically speaking. Even though the schedule followed a definite cycle there was enough variability to have a desirable effect.

6. Increased proficiency and dedication among the teaching staff. Because of the necessity of advanced planning for each section, it being different in structure than the last, the teachers were more aware of the need of variety in their presentations, which in turn called for more intense preparation. The staff acquired a unity of purpose, and working together as "teaching teams" they developed new techniques and methods of presentation, sought outside help and assistance from a greater
variety of audio-visual media, and in general upgraded their professional ability.

7. Students became more social minded. In the traditional program, students affiliated themselves with five or six groups during the week and in most cases throughout the entire year. In the modular scheduling program, these groups may change many times each day and many more during the week; thus students had opportunity to associate with more of their peer group and became more aware of each other's abilities and needs.

8. Homework load was lightened due to the IS time provided in the schedule. Students had ample opportunity, if properly motivated, to accomplish all that was necessary in the homework assignments while in school. The schedule did not eliminate homework altogether, however. The highly motivated student took work home in order to do the extra work necessary to excel. Others admitted to taking some assignment or books home with them so that they might gain a respite from the chores assigned in the home. It seemed that parents adopted an attitude that if the student was not involved with his studies, then he should be active in other assignments around the home. For this reason, some students admittedly took work home with them that they might have some "free time" in their rooms to relax and listen to the radio or watch television. Homework became the scapegoat.

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14 Advantageous to the administrator and professional staff, but perhaps not so to the student, is the fact that while the good teacher increased in his proficiency and preparation, the poor teacher was desperately "treading water" and waiting for relief.
9. Administrators had better opportunity to observe and supervise their teaching staff. The administrators in the released-time program are, without exception, involved with a teaching assignment in addition to their administrative assignments. In a traditional program, all classes begin and end at the same time. The administrator was, therefore, teaching at the same time as the rest of his staff, making observation and supervision most difficult.

In the modular program the periods overlap which meant that not all of the staff were involved at the same time. The administrator had more opportunity to observe and supervise.

10. Opportunity was afforded to provide for the scheduling of large groups. In some instances this was not possible, but when the facilities were adequate such teaching techniques as team-teaching, large group audio-visual presentations, guest speakers, testimony meetings and even large group discussions were incorporated into the released-time program.

Consideration of weaknesses. It is recognized that many weaknesses found in any program are, in fact, due to the inability or lack of dedication on the part of those responsible for its implementation and administration. Nevertheless, it was necessary that some of these weaknesses be considered.

1. Lack of flexibility. Though flexibility was the battle cry of the framers of the modular scheduling system, it was not

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15 Reference is here made to the administrator on the local level, viz., the seminary principal. The coordinators of the released-time program are not so involved.
flexible in operation. Emphasis seemed to have been based solely on the amount of classroom time needed. The end result remained: a rigid schedule for teachers and students regardless of current needs.

2. Offerings were still scheduled in the traditional lock-step courses, making it impossible to combine or alter sections once they were scheduled no matter what the needs of the group or the individual student in the group. In this respect the program lost sight of another significant original premise: the importance of scheduling for the individual.

3. Lack of student accounting during unscheduled time. There was no provision for student accounting during the unstructured time students had available. Experience has demonstrated that the average high school student is not sufficiently motivated to be able to assume the major responsibility for his own learning nor for the proper use of unscheduled time. It was virtually impossible for administrators, staff, or parents to locate a student during his IS time. This lack of accounting contributed to discipline problems in and around the school. Further, there seems to have been legal implications for the school's responsibility to account for the student during the school day. Greater accomplishment seemed to occur when students adhered to pupil accounting.

4. Lack of communication between the teaching staff and/or the administration and the student body. Because of the overlapping of class schedules, there was no time during the day when the entire
teaching staff had a common break that would provide a few moments for quick and often essential consultation, such as between periods of a traditional schedule. Classes were either beginning, in progress, or ending every eighteen to thirty minutes, depending upon the time module being used, making it further impossible to find a time when common announcements could be made to all classes over the intercommunication system. There was simply no time when "X" number of students could be contacted about anything.

5. Unpredictable schedule. The original request for course time was made, but no assurance was possible that the request could be honored in the manner in which it was submitted. It was impractical to write a computer program that would consider every facet of the possible outcome. Some selection and assignment was left to the discretion of the computer, after having established certain guide lines. Therefore, though it was desirable that the teacher meet the student every day and so requested his schedule, under the program one student might have been scheduled into the released-time program as often as three times in one day, and then not again for three days. The computer established this scheduling pattern, which became unalterable.

6. Teacher load, in terms of students contacted, was low. This was of necessity, rather than choice, and was brought about because of a lack of understanding of the computer program and scheduling process. The expressed concern of the modular scheduling program
was to so arrange the schedule of the individual student that he might enjoy the advantages derived from participation in large groups as well as small group instruction. 16 As noted above (page 70), when the course was structured it was done with these different types of presentation and instruction in mind and they were presented to the student in different phases of the schedule module. It was suggested that the two phase structure was the most uncomplicated and that it was assumed for the remainder of the example. 17 Figure 24 represents a course in the released-time program with an enrollment of 270 students. The course was divided into nine sections of thirty students each. Phase A indicated that the sections were to meet three times each week for a class period of three time modules of fifty-four minutes. The sections in Phase B were to meet twice during the week for two periods each meeting.

In the scheduling process, each phase of the course was considered independent of the other and was scheduled independently. Since this was the case, there was no assurance that section a-1 and section b-1 would be composed of the same students. The opposite was the result, and students from section a-1 were scattered throughout three of the sections in Phase B. As an example, note the schedule of Teacher X, as represented in Figure 25: section b-3 was composed of students from sections a-3, a-7, a-5, and a-9. Also

16 Bush and Allen, op. cit., p. 15.
17 Ibid., p. 19. Also refer to Figure 23 on page 76.
Figure 24
Sections Assigned to Teacher X

Figure 25
Weekly Schedule of Teacher X

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<th>TUESDAY</th>
<th>WEDNESDAY</th>
<th>THURSDAY</th>
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Book of Mormon Course
4 sections Phase A
4 sections Phase B
section b-5 consisted of students from sections a-3, a-7, and a-5. Some of the problems of lesson presentation became immediately apparent upon the receipt of his schedule: students in section b-5 who had been in attendance in section a-3, as well as those in a-7, had already received the teacher's presentation of Phase A of the lesson, while students from section a-5, assigned to section b-5, had not met in section a-5 for the Phase A presentation. The same was true of the students in section b-3 who were assigned to section a-9. There were many others similarly involved.\textsuperscript{18} Such an arrangement of schedules and sections made continuity of presentation virtually impossible and at the same time necessitated further preparation for such groups. Hence, the possibility of Teacher X having to make preparation for four different groups all in the same course.

It will be further noted on the schedule of Teacher X that he was involved with fifty-one periods each week for a total of 918 minutes of instructional time. In a traditional program a teacher, meeting five fifty-minute classes per day, would furnish a total of 1250 minutes of instruction, or an excess of 232 minutes each week over that of Teacher X. This would have been accomplished with one preparation. Thus it was apparent that the multiple preparations and presentations made necessary by the modular schedule lessened the teacher load in terms of students contacted.

\textsuperscript{18}The released-time seminary staff at Roy High School refer to such groups as "polyglot groups."
The advantage of greater staff utilization in the modular program came, however, when the possibility was realized of combining sections for large group instruction whereby one teacher handled as many as 150 students or more in one meeting. This was the equivalent of five classes of thirty students in the traditional schedule.

V. PROPOSED ADJUSTMENTS OF THE RELEASED-TIME PROGRAM TO THE MODULAR SCHEDULING SYSTEM

"Flexibility" is a word that strikes fear into the heart of many educators, even though they have a vague feeling that they should be in favor of it. It is a difficult thing to exchange the status quo, where there is comfort and security from long association, for something vague and undefined which brings with it a sense of anxiety. It has often been pointed out that a little knowledge is a dangerous thing. When the desire is present, however, and more knowledge is acquired, it is discovered upon closer scrutiny that the "dragon" is not so fierce and terrible as he appeared from a distance.

When the implementation of the modular scheduling system is contemplated, there is need for careful thought and planning, but there is no cause for panic! The released-time program, as we know it in the traditional scheduling program, needs but minor adjustment in order for it to function equally well under the modular schedule. Some areas of concern and possible adjustment are discussed below:

Exclusive section scheduling (ESS). In order to avoid the problems pertaining to the scheduling of students in different sections of
a course as they change phases, administrators of the released-time program could take advantage of the provision in the modular scheduling program which allows for exclusive section scheduling (ESS). When this procedure is followed, all students assigned to section a-1, for example, will also be assigned to section b-1 of the same course. This holds true with each section of Phase A and Phase B, thus eliminating the "polyglot groups" considered above. 19

The advantages of ESS are immediately apparent. The teacher can then arrange his presentation of lesson material with a degree of continuity, knowing that his students will be constant in their respective sections and that all students, except for absences, have received the same instruction.

There is also a disadvantage to ESS as far as the released-time program is concerned. Whenever any stipulation or control is attached to the computer program, the possibility of a complete schedule is limited. The life-blood of the released-time program is the individual student, and it is the policy of the program to do all that can be done by way of enlistment and recruitment of students that they may all be assured the advantages of the program. However, when ESS is employed, the probability of a decreased enrollment in the released-time program, as compared to that which would result from a computer program with no boundaries, is greatly increased. The percent of decrease can be known only after the program is presented to the computer and processed according to each type of program.

19 See page 80, and footnote 18.
The choice then lies between increased enrollment with the attendant problems of section mixing and the difficulties inherent in such a program as pertains to preparation and presentation of instructional materials, and a lesser enrollment and an increase in the quality of teacher preparation and presentation.

In light of limited experience, it would seem that the latter would be the most desirable course to follow.

*Communications.* The channels already established in the released-time program can be used more efficiently in order to assure communication between staff members and also among the members of the student body. Faculty meetings can be held regularly and often. Agenda can be prepared so that the problems discussed will have bearing on the operation of the program until such a time as the faculty is to meet again. Each teacher could be solely responsible for the students under his tutelage to see that they are informed of the needs and activities of the organization. It is the responsibility of the administrator to assure advanced planning, and the responsibility of the staff member to carry out the program as planned.

The assistance of the student body and class officers will be indispensable in this regard. The advisor to the student body officers will meet with them at regular intervals, as frequently as is necessary to accomplish the work assigned, to encourage and direct their activities. Bulletin boards will become more important as places of announcement of programs, activities, and any other matters about which the students should be informed.
The teacher’s schedule. In the modular scheduling program, when all sections assigned to a teacher begin at the same time, they are said to be scheduled on a single phase. If the sections begin at two different times during the schedule module, it is double or two-phase schedule. Three-phase, four-phase, and/or five-phase schedules can also be developed. In the example used, the classes met for thirteen periods during the week; therefore, it was necessary that they be of varying length, even though it would be possible for them to begin at the same time on a single phase schedule. Figure 26 illustrates four possible scheduling phases.

On the single-phase schedule, the classes met for periods 5, 6, and 7 on Monday, Wednesday, and Friday, and during periods 5 and 6 on Tuesday and Thursday.

The two-phase schedule met during periods 12, 13, and 14 on Monday, Wednesday, and Friday, and during periods 17 and 18 on Tuesday and Thursday. The three-phase schedule met during periods 1, 2, and 3 on Monday; periods 8 and 9 on Tuesday; 20, 21, and 22 on Wednesday; 1 and 2 on Thursday; and periods 8, 9, and 10 on Friday.

The five-phase schedule, the most unlikely to occur, met during periods 19, 20, and 21 on Monday; 12, 13, and 14 on Tuesday; periods 2 and 3 on Wednesday; 22, 23, and 24 on Thursday; and during periods 16 and 17 on Friday.

These are but a few of the possibilities. The most common schedule was the two- and three-phase. The phase of the schedule, be it one, two, three, or whatever, need cause but little concern when adjusting the released-time program to the modular scheduling system,
Figure 26
Diagram of Scheduling Phases

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- Single phase schedule
- Two phase schedule
- Three phase schedule
- Five phase schedule
provided, of course, that ESS was allowed. When this happens, the modular schedule assumes some of the characteristics of the period-exchange or rotating schedule. The presentations of lessons will be made to each section in their chronological sequence. The greatest adjustment on the part of the teacher will be in remembering where the last presentation ended and the current one begins. The single-phase schedule might be most desirable, but it is the most improbable one to occur. Those teachers who enjoy greater variety in the school day will not be too concerned about the sequence in which their classes fall, except in the preparation and presentation of certain teaching aids and audio-visual materials.

The one-teacher seminary. Even though the modular scheduling program provides for some variety in types of instructions, as noted above, the one-teacher seminary can adjust their offerings just as well as the released-time programs with larger enrollments. The entire enrollment will be structured as one course and the sections will be scheduled in such a way that only one section of students comes to the seminary at any one time.

The lesson outline. The lesson outlines prepared for the released-time program are so arranged as to cover a certain area of subject-matter, and each lesson has been assigned an approximate length of time for its completion. The individual teacher uses his own discretion and ingenuity in adapting the outline so as to make the greatest possible use of his talents and skills. The amount of time spent on each lesson

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will be determined by his ability to accomplish the objectives of the lesson as they relate to the lives of the individual students. In the traditional schedule, lessons have fallen into the same size blocks of time, but it must here be noted, and caution taken, that each lesson presented in the modular scheduling program must be prepared for the length of time available for the presentation, which time varies from day to day. Again, classroom procedures, viz., roll marking, devotional program, announcements, and any other extra-instructional activity, needs careful attention and preparation. Foresight and diligent preparation make it possible to make use of allotted time in such a manner as to satisfy the present needs of the student and still leave him properly motivated for further study.

Building. There is little that can be done to existing buildings in making adjustment to any program. The reverse is usually the case: the permanence of such structures often dictate the extent to which innovations can be implemented into any program. It is possible, however, to assist the smooth operation by making preparations for the quieter passage of students to and from their classes. Acoustical floor and ceiling coverings should be installed, noisy and irritable doors repaired, quiet single tone chimes to note the period's end without disturbing other classes in session, and any other precautions taken to educate and train students to move within the building in such a manner as not to disturb others.

If, however, a new building is planned in connection with a high school where the modular scheduling program is anticipated, there are
many things which could be planned to increase the effectiveness of the released-time program. In addition to all of the modern concepts of school buildings, it is desirable and advantageous to have rooms divided by removable partitions so that sections can be combined for large group discussions and presentations. A building so designed lends itself to the team teaching concepts,\(^{21}\) allows for the scheduling of all students in a course at a particular time, and then allows the teaching staff the flexibility to determine from day to day whether or not they would like to have the students in the classes altogether for one presentation or remain in their respective groups. Areas for individual study might be provided, as well as an audio center, where students can be assigned to listen to tapes, recordings, or other media (teacher, student, and/or commercially prepared) that will give them background or depth in the pursuit of their study.

Let it again be noted that these are the "extras" which add much to a program, but they are not essential. Possibly the one most important ingredient for the success of the released-time program, if one could be singled out, is a dedicated teacher with a sincere love for his work and enthusiasm sufficient to maintain a professional "growing edge."

\(^{21}\) Team teaching refers to a situation in which the teaching to a specific group of pupils of a single or several subjects during a particular period of time is carried on by more than one person—one or more fully qualified experience career teachers who may be directly and systematically assisted in their instruction by teachers less responsible and/or experienced, and by technical and clerical aids and resource persons from other professions and occupations in the community. This is in contrast to the prevailing practice where one teacher does all the teaching of a subject to a particular group of pupils during a particular school term. Robert N. Bush, "Searching Appraisal of New Developments," \textit{op. cit.} See bibliography.
CHAPTER V

ADJUSTING THE RELEASED-TIME SEMINARY PROGRAM

TO THE DAILY DEMAND CONCEPT OF SCHEDULING

I. BACKGROUND

Educators have not, and in all probability never will, come to a unanimity concerning trends which are now taking place in school scheduling programs. There are, however, many who are convinced that part of the cure for some of the ills which beset the educational institutions lie in schedule modification of one type or another, as has been pointed out in the previous chapters.¹ It had become apparent that the more the school program moved into the area of individualized instruction, the more important schedule modification became. If the gifted student, as well as the student who moved more slowly, was to gain the greatest benefit from his educational experience, he must be allowed to progress at his own best pace, free of the artificial barriers so characteristic of the graded school. When such an atmosphere was created in a school, the problem of scheduling students, teachers, facilities, and time grew to one of enormous proportions. It was also increasingly obvious that, for the most efficient use of time, energy, and resources, each student

¹Chapters III and IV discuss other schedule modification programs which were designed for this purpose. A. W. Sturgess, assistant professor of education at Winona State College in Winona, Minn., makes the following statement: "It would seem to the author that, until existing facilities can be replaced, many administrators would find value in suggested innovations in their existing plant to incorporate the new approaches in scheduling as described by such major contributors as Dr. J. Lloyd Trump." A. W. Sturgess, "High School Schedule in Midwestern Secondary Schools," op. cit., p. 50.
had to have a new schedule every day. This called for a new concept of scheduling—an advanced type of flexible scheduling—which provided for the production of individual daily schedules to accommodate the instructional requirements of each student (the demands of the instructional situation) as perceived by the teachers. Hence the term Daily Demand Scheduling.

Beginning with the school year 1961-62, such a scheduling system was inaugurated with the students in the ninth grade of Brookhurst Junior High School in Anaheim, California. Under the direction of Mr. Gardner Swenson, principal of the school and an innovator at heart, these 400 students began a program of daily rescheduling of their classes as to time, teachers, and space. The students were previously registered according to a rigid schedule but flexibility was achieved by the daily reassignment of students according to the request of the teaching staff. The scheduling was handled by an administrator known as the scheduling coordinator, assisted by a staff of teachers and clerks, and was accomplished by the use of edge-punched cards.

Others became interested in the daily demand concept and were soon making inquiry and doing research into this area as it suited their particular situation. It was readily apparent that it would be next to impossible to develop such a program and process the requests manually if the number of students or the number of teacher requests should increase by any appreciable amount.

It was at this point that the staff and administration of the Brigham Young University High School of Provo, Utah, under the direction

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Brookhurst Junior High School, 601 North Brookhurst Street, Anaheim, California, belongs to the Anaheim Union High School District, 123 North Citron Street, Anaheim, California.
of Dr. Edwin A. Read, became interested in the concept. They were experimenting with some programs concerned with individualized instruction and, as noted above, the two concepts were highly compatible. Encouragement and assistance was given to the project by Dr. Gary Carlson, director of the Brigham Young University Computer Center, and, finally, through the efforts of Dr. Glen Ovard, coordinator of Experimental Programs at Brigham Young University, and Dr. Antone K. Romney, dean of the College of Education, the assistance of a systems analyst and a programmer was solicited from I.B.M. Corporation. This assistance was generously granted.

The system was designed and the program written which would allow the teachers and staff of the Brigham Young University High School to submit requests for students they needed for a particular day and specify the length of time for which they would be required. This system incorporated the great speed of the electronic digital computer with the desire of the administration and staff to become more flexible in their approach to the educational process. The resultant program came to be known as the Daily Demand Computer Scheduling (DDCS). Data processing equipment and computers had been used in many instances for the purpose

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3Brigham Young University High School is located on the campus of Brigham Young University, Provo, Utah, and is a part of the College of Education Laboratory School.

4George U. Hubbard of the I.B.M. San Jose, California, office, and M. Robert Rowe of the Salt Lake City, Utah, office of I.B.M. were analysts who assisted with the D.D.C.S. program. Larry Gunther, a student of Brigham Young University working with the Computer Center, was responsible for the computer program under the direction of Mr. Rowe.
of constructing the master schedules and other data processing functions within various school districts, but the DDCS program was unique in that for the first time a computer was used to construct a school schedule on a daily basis. The DDCS program was used as the basis for the present study.

II. DEFINITION OF TERMS

**Input** -- Digital computers accept numbers, letters, and symbols. Information is usually fed into the system from punched cards, punched paper tape, or magnetic tape, or inserted manually from a keyboard or switches.

**Output** -- After doing its work, the computer can produce answers in several forms. Results may be punched into cards, recorded on magnetic tape, or printed in report form. Printers provide high-speed computer output by printing an entire line of information at one time. The functioning of the elements of a computer may be compared to the steps required for solving a problem by paper and pencil methods. The input would correspond to the information given in the problem. The answers are the output.

**Computer program** -- "Program" is just another way of saying "series of instructions and fixed data." A program must define in complete detail just what a computer is to do, under every conceivable combination of circumstances, with data which is subsequently fed
into it.  

Programmer -- A programmer is the person who, by using one of several different computer languages, develops and writes the computer program.

Pre-punched cards -- When cards are used as the source of input data, the data is transcribed onto the card by a process known as key punching. When this has been done the cards are said to have been punched. If the data is constant and is to be used repeatedly, the punched card is reproduced automatically and is available for input each time the program is used without the necessity of the time-consuming key-punching process. These cards were called pre-punched cards and were used as the input for the DDCS program.

Teacher file -- The teacher file consisted of an assortment of pre-punched cards from which he could compile his daily requests.

Request deck -- When the teacher had compiled his request(s) from the cards contained in his file, this compilation of cards was referred to as the request deck. As the request decks from all of the teachers were assembled and edited they became the input data for the computer program.

Must-may schedule -- Each day a list of instructions was provided for the students concerning information which was not contained on their preliminary schedule. This list included the classes that

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certain students must schedule in addition to the classes printed on
the preliminary schedule. Also listed were choices of elective areas
and facilities, as well as the names of the staff members along with
times during the day when they would be free for consultation. Students
were instructed that these choices were available to them on an elective
basis, or that they may schedule them if they so desired, and time was
available after the printed schedule and must schedule were satisfied.
This total list was called the must-may schedule.

Scheduling groups -- Students were assigned to a specific room
each morning at the beginning of the school day where they received
their preliminary schedules for the following day, finalized the same, and
obtained the final schedule for the current day. The average group con-
sisted of 25 students (usually of the same grade level) supervised by
two members of the teaching staff. Each group of twenty-five was referred
to as a scheduling group.

Scheduling group file -- This file consisted of an assortment of
pre-punched cards prepared for the use of the students in finalizing
their schedule. This file was also referred to as a tub file.

Must-may deck -- It was the responsibility of the student, under
the supervision of the scheduling group advisors, to finalize his
preliminary schedule. This was done by scheduling some class or
activity (listed on the must-may schedule) for every period which was
not printed out on the preliminary schedule. After the schedule was
completed, the student received cards from the scheduling group file
which, when properly arranged, served as input data for the computer
program so that the final schedule could be printed. These cards, arranged in proper order and sequence, were called the must-may deck.

**Course file** -- The course file contained the following: (1) title of the course, (2) name of the teacher, (3) list of rooms in the order of their preference, and (4) an alphabetized list of all students registered in the course. This file was constant and was kept on magnetic tape as part of the computer program. Changes could be made in the file by action initiated by the teacher.

**Clusters** -- This term referred to groupings of students, large or small in number, which were formed by the teacher in order to accomplish certain instructional objectives. They were of a permanent, semi-permanent, or temporary nature, according to the desire of the teacher. Clusters were formed and/or dissolved by the simple process of submitting a teacher request.

### III. DESCRIPTION OF THE CONCEPT

The Daily Demand Computer Scheduling System described below followed the basic plan and philosophies of other daily scheduling programs. The primary difference was the scope of the program, the nature of the input data, and the convenience and versatility afforded by the use of the electronic computer. Figure 27 illustrates, in flow-chart form, an overview of the system used by the Brigham Young University High School in the Daily Demand Computer Scheduling program.

**Overview.** From an assortment of pre-punched cards (referred to as the teacher's deck) made available to each teacher, the teacher would
FIGURE 27

DAILY DEMAND COMPUTER SCHEDULING
OVERVIEW

[Diagram of daily demand computer scheduling overview]

- Teacher File
  - Control Cards
  - Student Cards
  - Periods Cards
  - Course Cards

- Request Decks
  - 7040 Prelim. Sched.

- Student Schedule
  - Room Cards
  - Must-May Deck
  - 7040 Final Sched.

- Teacher Schedule
  - Teacher

- Student Schedule
  - Class Rolls
  - Misc. Reports

- Final

- Student Schedule

- Teacher Schedule

- Class Rolls

- Misc. Reports
assemble his requests for the day. These request decks were then pro-
cessed by an I.B.M. 7040 Computer and the output was in the form of
preliminary student and teacher schedules. The students then completed
their schedule by making certain choices which were available to them,
and indicated their choices of classes, study areas, or appointments by
the use of other pre-punched cards prepared for that purpose. These
cards were referred to as the student's must-may deck. The must-may
decks were then submitted to the computer for final scheduling and
balancing of classes. The output consisted of final student and teacher
schedules, final class rolls, and miscellaneous reports. These schedules,
rolls, and reports were then distributed to the students and/or staff
for use during the time when the classes were taught. This process
did not occur during the course of a single day, but rather was distributed
over a three-day period. Hence, students requested on Monday were finally
met on Wednesday. There follows a daily detail breakdown:

Day One. The detail of Day One is represented in Figure 28.
The teacher initiated the request by choosing cards from his teacher
file. The basic pre-punched cards necessary for a request were (1) the
course card, (2) a periods card indicating the number of periods the
teacher wanted to meet with the students, and (3) the students cards,
indicating which students he wishes to meet. Such information as the
teacher's name, room, total enrollment of the course, and alternate
rooms was already contained in the computer program as part of the
course file, and remained constant until the teacher should initiate
some change, as noted. The request decks and any changes in the course
FIGURE 28
DETAIL - DAY 1

Note: This information repeated for each course. Assumed unless changed by request deck.
file were then submitted to the scheduling coordinator where they were edited (in the case of the requests) and updated (in the instance of the course file). If any other control or priority cards were necessary, the coordinator inserted them into the teacher's request decks at this time.

At this point the program was ready to submit to the computer. This occurred during the evening or night of Day One, and the output, in the form of preliminary student and teacher schedules, class rolls, and reports, was ready for the beginning of Day Two.

**Day Two.** Figure 29 outlines the detail for Day Two. The output from the first computer pass was handled by the coordinator and distributed to the students and teachers through their scheduling group assignments. In the scheduling groups, the students had thirty minutes to complete their schedule for the following day and choose the proper cards to indicate their choices. These cards were available in each group in the form of a scheduling group file. When the cards were assembled in their proper order and sequence, the student's must-may deck was completed. These decks, along with any changes or corrections the teachers desired to make in their schedules or rolls, were again submitted to the computer for processing. This computer pass was run during the afternoon or evening of Day Two. The output from this pass constituted the final student and teacher schedules, class rolls, and reports.

**Day Three.** Figure 30 outlines the detail of Day Three. The final schedules, rolls, and reports were returned to the coordinator, who in turn distributed them to the students and teachers through their
FIGURE 29
DETAIL - DAY 2

PRELIMINARY

Coordinator
- Lunch Room
- Students
- Scheduling Group File

STUDENT

TEACHER

SCHEDULING GROUP

450 Copies

FINAL

Coordinator

Edits

Total Must-May Deck

STUDENT

Correct & Change

Changes

Teacher Schedule

Class Rolls

Misc. Reports

FINA
FIGURE 30
DETAIL - DAY 3

FINAL

Student Schedule ➔ Coordinator ➔ STUDENT ➔ TO CLASS

Teacher Schedule ➔ Coordinator

Class Rolls ➔ Coordinator

Misc. Reports ➔ Coordinator

SCHEDULING GROUPS

TEACHER
assigned scheduling groups. After the student had finished completing his preliminary schedule for the following day, the final schedule for the current day (Day Three) was given to him for his direction throughout the day.

It should here be noted that any given day was either Day One, Day Two, or Day Three, depending upon which phase of the scheduling process one considered.

IV. OPERATIONAL PROCEDURES AND DATA

When compared to the period exchange and rotation or the modular concept of scheduling, the daily demand concept was rather extreme in its scope. The period exchange programs needed very little advanced planning and were put into operation merely by administrative decision. The modular concept took much advance planning on the part of the staff and administration, but once the plans were made and the schedule completed, the schedule was rigid for the remainder of the school year. When the daily demand concept of scheduling was adopted, however, the planning and preparation of the schedule was continuous. The inauguration of the DDCS program in Brigham Young University High School, for example, was preceded by three years of intensive research and preparation. When the program was implemented the research continued, and will of necessity be continuous, until such a time as the schedule is perfected. Educators are the first to admit that such a dream, a perfect schedule, will be a long time coming into fruition. This is to emphasize the many facets presented by the DDCS concept of scheduling, and because
of these intricacies it was deemed advisable to further describe the concept through a discussion of the following operational procedures and data.

**Scope of the program.** The DDCS program here described was used in a school with a population of 395 students distributed over grades seven through twelve in the following numbers: twelfth grade, 68 students; eleventh grade, 64; tenth grade, 68; ninth grade, 68; eighth grade, 65; and 64 students in the seventh grade. There was an average of fifty teachers, administrators, and graduate assistants involved in making requests for student time. The number of daily requests handled by the program ranged from a low of 94 to a high of 196 with an average of 161 per day. This was very high when compared with the average number of daily requests handled by the staff at Brookhurst Junior High School. They averaged 33 requests daily and their scheduling was processed by manual procedures.

**The school day.** The school day began at 8:00 a.m. and closed at 3:30 p.m. The first thirty minutes were devoted to scheduling groups to which each student was assigned, and during which time the students prepared their schedules for the following day, took care of necessary homeroom chores, and received their completed schedule for the current day. The remainder of the day (beginning at 8:30 a.m.) was divided into twenty-eight periods of fifteen minutes each. Every student was scheduled for each of the twenty-eight periods.

**Administration of the program.** A scheduling coordinator, working under the direction and supervision of the school administration,
was directly responsible for the administration and control of the program. It was his responsibility to receive the daily requests from the teachers, edit these requests, submit them to the computer center for processing, and return the output to the students and/or teachers. His was also a counseling and an advisory role, in that he instructed teachers in the techniques which could be used in order to realize the greatest benefit from the program. Major conflicts were avoided in scheduling by ruling that all requests wherein time was specified had to be cleared through the scheduling coordinator.

**Input data.** In order to avoid the daily key punching of all data, each teacher was furnished with a teacher file of pre-punched cards. These cards were classified as course cards, period cards, student cards, control cards, teacher cards, room cards, and alternate facilities cards. They were color coded for ease in assembling and editing.

When these cards were properly assembled and arranged, they were then submitted as the input data for the computer program. After the data had been recorded on magnetic tape, the cards were returned to the respective teachers for further use.

**The teacher's daily request.** All computer scheduling was initiated with requests from either the administration or the teaching staff. A typical teacher request indicated the title of the course,

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6 Students were granted certain privileges and choices in the matter of scheduling classes, but they were denied initiatory powers as far as making requests of the program. Students requested teachers to schedule them into certain areas or classes, but the request was made of the program by the teacher.
the number of periods the teacher wished to meet with the student(s),
and the name(s) of the student(s) he wanted to meet. This was accom-
plished by assembling the proper cards from his file of pre-punched cards.
When a request was so compiled it was called the teacher's request deck,
and one such request deck was handed to the scheduling coordinator for
each group he wished to meet.

By use of the cards at his disposal, a teacher had the possi-
bility of requesting any of the following groupings of students:

a. all students of the studentbody
b. all students of a particular department
c. all students registered in a particular course
d. all students grouped in permanent, semi-permanent, or
temporary clusters

e. an individual student
f. no students

The teacher, the room to which the class was assigned, along with
a listing of alternate rooms, and the enrollment of the course were all
inherent in the program and remained constant unless the teacher altered
the information by use of certain control cards which were placed at
his disposal.

7Temporary clusters of students were often formed on a one-
day basis.

8A "no students" request was used to reserve a specific block of
teacher time free from scheduling. This was used for preparation time,
out-of-school assignments, and other foreseen interruptions.
Processing the teacher's daily request. Due to the editing, the computer processing time, the printing of the preliminary and final schedules, rolls, and reports, it was not possible for a teacher to make a request in the morning and have it honored for that school day. As noted above, the scheduling was done on the basis of a two-day lag, meaning that requests received on Day One (Monday) were processed, completed, and finally taught on Day Three (Wednesday). During the afternoon and evening of Day One, the requests were edited and processed by the computer. On the morning of Day Two, the preliminary schedules were distributed to the students in their scheduling groups where they were given opportunity to complete their schedules from information furnished them at that time. The schedules and rolls were finalized during the evening of Day Two and given to the students as they reported to their scheduling groups on the morning of Day Three, at which time the schedules were current. This process was repeated daily, which meant that on any given day all three of the above mentioned processes were being carried out.

Required and elective courses. All students were registered according to a rigid schedule and in compliance with state laws as to required courses. For example, a student registered in English III remained in that course for the entire year, but the time and place of meeting for the class was subject to change on a daily basis. Teachers requested students as they felt the students had need to meet under supervision and for the length of time that would accomplish the instructional objective of their meeting. It happened, therefore, that
some students had more unrequested time than others. As the students met in their scheduling groups each morning, the student received his preliminary schedule for the following day. This schedule indicated only those classes for which the student had been specifically requested by his teachers, as well as the length of time he was to meet with them. The preliminary schedule, however, was always incomplete. It was possible that one or more of his teachers wanted to meet with him but had left the choice of several times to the students so that he could work it into his schedule. It was understood, however, that he must schedule that class.

After having scheduled all classes so designated, in addition to those already printed on his schedule there was the possibility that certain periods remained unscheduled. The scheduling coordinator, in cooperation with the teaching and administrative staff, had prepared a further list of possible choices from which the student could complete his schedule. This list included courses of study, areas of laboratory work, areas of study, and names of teachers and staff who were free for certain periods for the purpose of individual consultation. These choices were given to the students with the instruction that when all of the must courses were scheduled he may then complete his schedule from the latter list. This schedule of classes, electives, and other offerings was called the must-may schedule. It was mandatory that the student schedule himself for twenty-eight periods, including two periods for lunch. There was no "free" or unscheduled time.
Independent study (IS). Although no "free" or unscheduled time was allowed the student during the school day, there were certain privileges available to those students who had proven their ability and willingness to take advantage of such. Certain areas were provided where these students could go and study independently of any other student or teacher. In those areas they were provided with resource materials and certain resource personnel to assist them, but the choice of the material to be studied and the length of time spent with it was left to the judgment of the individual student. It was necessary, however, for purposes of student accounting, that each student indicate on his schedule the time and place of such study periods.

Supervised study (SS). Students who were less motivated and needed constant encouragement and supervision of their study time, so as not to waste their time and that of the others in the area, were assigned to supervised study areas where they were controlled, disciplined, and assisted in the preparation of their lessons. A student could gain IS privileges through proving himself capable of handling such a responsibility. The converse was also true: students who had been given IS privileges oftentimes lost them through neglect and/or poor study habits and were assigned to an area for supervised study.

Student accounting. As noted above, the DDCS program provided for strict student accounting. By checking the student schedules not picked up during the scheduling group meeting, it was possible to determine the names of those absent at the beginning of school. These names were compiled and sent to all teachers during the early part of the first hour.
When a student whose name was on a class roll did not appear in class and his name did not appear on the absence report, he was sluffing class and attendance procedures were put into operation.

When a student came late it was necessary for him to report to the attendance office and clear his tardiness before receiving his schedule for Day Three (the current day). His presence in class with his schedule (even though his name was on the absence report) was evidence that he had cleared with the attendance office. A daily location file was kept so that a student could be located at any time of the day.

**Length of class periods.** Classes were normally held in multiples of the fifteen-minute period—three periods, four periods, etc.—to satisfy the instructional objective of the teacher. There were no one-period classes; however, students were often scheduled for one-period appointments with teachers, counselors, and administrators for purposes of consultation and guidance. Students were also urged to use the single periods for checking out and returning library books.

**Passing time.** The schedule did not allow for passing time but the classes were dismissed at the sound of a chime five minutes before the end of the period. The next class began without the chime and it was the dual responsibility of each student and teacher to govern tardiness. The actual amount of instructional time in any class could be determined by multiplying the number of periods by fifteen minutes and then subtracting five minutes for passing time.

**Conflicts and priorities.** Conflicts were inevitable. However, all major conflicts were avoided by the issuance of priorities to all
requests where a specific starting time was necessary. The priority control card assured the request of being scheduled ahead of all other requests. It was the responsibility of the scheduling coordinator to clear all requests and insure against two conflicting requests receiving such priority. These types of requests were held to a minimum, thus allowing the system greater flexibility in the scheduling process.

V. EVALUATION OF THE DAILY DEMAND CONCEPT OF SCHEDULING

AS PERTAINS TO THE RELEASED-TIME SEMINARY PROGRAM

Consideration of strengths. Among the salient features of the Daily Demand Computer Scheduling program, the following were worthy of note:

1. Complete flexibility. The purpose behind schedule modification of any kind was to obtain flexibility in the educational program, and the DDCS program seemed to offer this particular quality more than any of the other scheduling concepts. The program allowed the teachers the advantage of being able to plan their lessons and schedule the presentations in such a way as to meet the current needs of the students.

2. Allowed maximum use of time. In the traditional program, teachers often found the period was over before they had accomplished what they had planned, or that there was a surplus of time left after their presentation was complete. This situation is understandable when one realizes the difficulty of planning every lesson or presentation to meet the same time requirement. Under
the DDCS program, the teacher requested the amount of time he needed to accomplish his instructional objective, whether more or less than the "normal" class period. The program was sufficiently flexible to allow him the prerogative of changing the time requirement daily, if he so desired.

3. Large group presentations. More efficient use of time and facilities was allowed since it was possible for teachers to call large groups of students together for special presentations, and this without disrupting other groups or classes. A film was presented to one large group in one forty-five minute period, whereas in the traditional schedule it would have necessitated the use of four forty-five minute periods to accomplish the same objective.

4. Small group discussions. In the DDCS program it was possible to divide the classes into smaller groups without interfering with other groups or classes. This was done either by heterogeneous or homogeneous grouping according to the objectives of the class. During a class discussion on morality, for example, the students in three classes were divided into four groups: two groups of girls and two groups of boys. These were grouped homogeneously for the purpose of stimulating wider participation in the discussion. The classes were requested in their regular three groups for their next meeting.

5. Counseling. The DDCS program provided opportunity for teachers to schedule counseling appointments with individual
students. When a teacher felt the student needed help, he requested that he be scheduled for an appointment. The student, on the other hand, often came to the teacher and requested that the teacher initiate a request in the scheduling program so the student could receive help or counseling. Students initiated requests in this manner.

6. Individual programs. Because of the variety of choices offered the student in his elective program, under the DDCS program he was able to establish and pursue an individual program in an area of his own choosing. By the time he graduated from high school, one student had completed all but two of the required classes for a college major in Spanish.9

7. Student accounting. The DDCS program provided for pupil accounting and absence detection. This feature was not present in some other schedule modification programs.

8. Location file. A daily location file was maintained making it possible to locate any student or staff member at any time during the day.

Certain side benefits were also evident:

1. Better lesson planning and preparation. Teachers planned their lesson materials and the presentations more carefully because it was their responsibility not only to request the time necessary

9 The philosophy of continuous progress contributed to this accomplishment. In this framework, a student is allowed to progress at his own speed and the cooperation of the language department of the Brigham Young University made this, as well as other individualized programs, possible.
to accomplish their purposes, but also to use it wisely. They seemed
to feel an obligation to make better use of time they had requested
than of time that was thrust upon them by the schedule. It was felt,
in many instances, that better teaching resulted.

2. Team teaching. Teachers teamed together for special units
of study or for special presentations. Such an arrangement could
have been rather permanent, but more often was on a very temporary
basis, changing as the teachers felt the need. The mechanics of
submitting the teacher's request in the DDCS program made it possible
for teachers to group departmental courses without any change in the
schedule or scheduling program.

3. Better use of teaching aids. Teachers were able to utilize
teaching aids to a greater extent by scheduling time to orient or
prepare them properly.

4. No cancelled classes. The DDCS program eliminated the
necessity of cancelling classes or taking students out of other
classes for assemblies and other studentbody activities. Notice was
given prior to the day of such activities and teachers cooperated
by reducing the amount of time they might have normally requested.

Consideration of weaknesses. Perfection is a goal to be attained,
but not yet realized. Especially is this true with scheduling programs.
Some of the blatant weaknesses of the Daily Demand Computer Scheduling
program were:

1. Not all requests were honored. Because of weaknesses in the
computer program, some classes were not scheduled. This resulted,
in part, from the attempt to abbreviate the program sufficiently to accomplish the purpose and yet not make the program impossible because of the high cost of computer time. When classes were scheduled, it was often the case that only a certain percentage of the students were scheduled. This was particularly frustrating to the teacher who was forced into giving his presentation to only a small part of his class. The remainder of the class missed the material or were under the necessity of making it up in some other way.

2. Light student schedules. While some of the students had rather complete schedules, many of them received their preliminary schedule with only one or two classes scheduled for the entire day. This necessitated an exorbitant amount of time being scheduled into study areas.

3. Loss of daily student contact. Teachers have been oriented to the need of daily contact with their students and therefore were disturbed when this contact was not forthcoming due to the above scheduling problems. The frustration was intensified by the fact that it was often different students who were missing each day.

4. Room preparation. In the computer program, each course was assigned a preferred room with a list of alternate rooms in case the one preferred was not available. Therefore, a teacher had little assurance that he would be assigned to the same room all of the time, or even for all classes of the course taught in a single day. A teacher with three sections of the same course was assigned to three different rooms in one day. The continual
moving from one room to the next precluded the preparation of permanent bulletin boards and many other previously designed visual aids.  

5. Variable starting times of periods. The DDCS program was similar to the modular scheduling program in the matter of starting and ending times for classes. It was possible, and very often the case, that no two classes in the released-time program would begin at the same time. On the following day, the reverse was often the case and they would all have common starting times. This fact made joint devotionals and any other simultaneous communication between classes impossible.  

6. Conglomerate classes. In the DDCS program it was possible to request all of the students registered in one course, but to specify that they should be divided into a certain number of nearly equal parts, as the system could find groups without conflict. For example, a teacher wished to meet all students in his course for three periods and wanted them divided into four groups. When the schedule was complete he found that each class was a conglomerate class, in that it was made up of students from each of his other classes. Such a class was rather disturbing to the teacher since the class did not have personality of its own and the teacher often found himself at a loss to know exactly how to proceed. It was difficult to create a feeling of oneness among

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10 Specialized areas such as chemistry laboratories, home economic areas, industrial arts shops and rooms, band rooms, and the art areas were restricted to those classes and students involved in those courses. No alternate rooms were listed for these.
the members of the class that would motivate them to participate with each other. It must be noted, however, that by arranging the request, a teacher could call together a class that would demonstrate almost any type of personality or feeling he wished. In this manner classes were formed for particular occasions with very interesting and beneficial results.

When such conglomerate classes were scheduled, it was difficult to arrange prior preparation for devotional programs or assignments of any nature as far as student participation was concerned. The teacher did not know the makeup of such a class until the morning of Day Two.

VI. PROPOSED ADJUSTMENTS OF THE RELEASED-TIME PROGRAM TO THE DAILY DEMAND CONCEPT OF SCHEDULING

When the merits of the traditional rigid schedule are brought into comparison with those of the completely flexible program, it must be remembered that the most probable result of choosing one over the other will be the loss of some of the advantages of the program which was discarded. It would be a fallacy for one to assume that the strong points of any two contradictory philosophies of scheduling could be incorporated into one perfect schedule. Certain adjustments are necessary, some of which are:

Teacher attitude. The teacher must acquaint himself with the most outstanding features of the daily demand concept and exploit them in his teaching. It will be of little value to waste time in yearning for some of the comforts and securities of the traditional program.
His lesson planning, methods of presentation, teaching techniques, assignment of study areas, and, in short, his entire attitude toward the educational process must be adjusted to be harmonious with the new philosophy. He may find it necessary to scrap lesson plans and outlines of previous years and even develop an entirely new approach to his subject.

The transition can be more easily accomplished if the members of the teaching staff of the released-time program will meet together often in a curriculum planning session and exchange ideas with each other. It is a richly rewarding experience to invite others not of their own program but who are skilled in this approach to visit and share ideas.

Lesson planning. Studies have been conducted to determine the effect of daily teacher contact with the pupil, as opposed to less frequent contact, upon the learning of the student.

It must be pointed out that there is very little evidence to suggest that daily instruction in every subject is superior to instruction on a less regular basis. Available evidence suggests that the critical nature of daily instruction varies widely with the subject, and although some teachers involved in non-daily instruction feel very strongly that this is not as successful as daily exposure, the tested results have not borne out their assertions.  

In the released-time program, as in all other courses in the traditionally scheduled school, the emphasis has been placed on daily teacher-pupil contact. Students have also been oriented to this approach until it has become almost a necessity for them. In the DDCS program it was often the excuse of the student, when questioned about why he was not studying, that he had not met his teacher for two days and,

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11Bush and Allen, op. cit., p. 95-96.
therefore, had nothing to do.

In the daily demand concept teachers must divorce themselves from the day-to-day approach. The course outlines for the released-time program are divided into units and sub-divided into lessons. Teachers must change their orientation and plan their assignments so as to include the entire unit, not just the daily lesson. Then if a student misses a class due to scheduling problems or even as the result of an excused absence, he will be current on the assignment and have sufficient material to occupy his study time. Due dates will be established so that the student can keep current with his work. If the class periods are not sufficient for a student to gain a full understanding of the concept, there will be ample opportunity for him to schedule private periods of consultation with the teacher when he comes to areas where help is needed. On the other hand, if the student through diligent application of his time and talent finishes the assigned material before the due date, he is free to pursue one of the elective courses of his program or do research and reading that will broaden the scope of his understanding of the subject under consideration.

The DDCS program is so designed that when a student is not scheduled in a class because of conflict with another request, he automatically receives a priority for the class in which he was not scheduled. The next day the unscheduled class of the previous day, having the priority, will be the first class into which he will be scheduled. The program has made allowance for part of the above problem.
Programmed instruction. The Department of Seminaries and Institutes of the Church of Jesus Christ of Latter-day Saints, the administrative body of the released-time program, has established a center for the development of programmed instructional materials to be used in the released-time seminary program. In the environment of the daily demand schedule, these programmed materials will be most compatible with the philosophy of independent study time and will furnish a rich supply of supplementary material. These materials are now available for Book of Mormon and Church History courses.

Audio instruction. While preparing his lesson, the teacher can formulate a short discussion of the concept to be taught by the lesson. This discussion can be about ten minutes in length and be accompanied by a study guide. The discussion will then be transcribed on magnetic tape. When a student is absent from class, either because of an excused absence or a scheduling problem, or if he needs further clarification on the concept under discussion, the teacher needs but to hand him a study guide and give the student access to the taped presentation of the concept. Accurate and thorough preparation can make of this a most effective teaching aid without limiting the teacher to one student at a time.

Portable visual presentations. Each room in the seminary building should be appropriately decorated with pictures, flowers, and displays conducive to a spirit of reverence and worship. In the DDCS program where rooms are not permanently assigned, it will not be feasible to place posters and bulletin boards of a permanent nature in the room,
especially if they have reference to a single lesson. To adjust to this situation, teachers will develop portable posters, maps, charts, and other pictorial displays which have to do with specific lessons, and move them from room to room as they are assigned. The development of certain skills with the chalk-board or the flannel-board, as suggested by Brother Charles R. Hobbs,¹² may well be a most intriguing solution to the problem and at the same time enhance the effectiveness of the teacher's presentations.

**Instructional techniques and methods.** The DDCS program offers sufficient flexibility to the teacher that he may incorporate almost any technique or method he desires for any given period of time. Small group instruction, large group presentations, team teaching, or even an individualized program—these and many others are available, limited only by the limits of the teacher's own ingenuity.

The released-time program can be fitted into such a scheduling program as the daily demand concept with a minimum amount of adjusting to the program and its offerings. The major adjustment must come on the part of the teacher, his attitude and his preparation.

CHAPTER VI

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to investigate the nature of three scheduling concepts and determine what adjustments would need to be made in the released-time seminary program of the Church of Jesus Christ of Latter-day Saints in order to make that program function harmoniously with schools who were using or contemplating the adoption of such flexible scheduling programs. A flexible scheduling program was defined as almost any school scheduling program which attempts to alter the traditionally rigid period structure of a school day. For the purpose of this study, these schedule modification programs were considered in three categories: (1) the period exchange or rotating period concept of scheduling, (2) the modular concept of scheduling, and (3) the daily demand concept of scheduling. The study included a review of the literature concerning schedule modification programs as well as a study of public schools where each of the above categories were being used. Interviews were held with administrators, teachers, and students to determine their reaction to the programs and to ascertain the strengths and/or weaknesses of each program as opined by those involved with it. Visits were made to the released-time seminaries involved with such programs to acquire information for comparative purposes and to assist in the formulation of suggestions for improved operation of the released-time program under the scheduling programs. From these sources coupled with sixteen years of personal teaching experience in the released-time
program, suggestions and experience necessary for the adjusting of
the released-time seminary program to the three flexible scheduling
categories noted above were compiled.

I. SUMMARY OF FINDINGS

The following findings were revealed from a review of the literature
dealing with schedule modification programs; information received from inter-
views with public school teachers, administrators, and students; information
gleaned from the experience of released-time personnel who have worked in
flexible scheduling programs; as well as personal experience of the writer:

1. The literature on flexible scheduling programs makes no
mention of released-time programs being associated with any of the
schools using or experimenting with flexible schedules.

2. Implementation of the period exchange or rotating period
schedule was the least complicated of the three categories considered.
It required the least amount of adjusting on the part of the released-
time program.

3. The daily demand concept was the most drastic and sophisti-
cated scheduling system. It required daily preparation as to class
size, class structure, and length of the class period.

4. The released-time program has functioned successfully under
all three types of scheduling programs.

5. The expressed primary goal of each scheduling program was
to provide better opportunity for the education of the individual
student.
6. Each of the scheduling programs considered had as one of the major weaknesses (from the standpoint of the teachers) loss of daily contact with the student.

7. A common strength among the programs was that each added variety to the school day and to the individual classes.

8. There is little or no flexibility in the period exchange or period rotation programs nor in the modular concept of scheduling.

9. Lengthened school day and extended class periods were common among schedule modification programs. They appeared to be well planned, often with a regular agenda or format.

10. Due to the greater teacher involvement in counseling situations and the apparent pressure of more exact preparation in the modular concept and the daily demand concept, teaching loads were smaller than those involved with either the traditional or the period exchange and rotation programs.

11. The schedule modification programs have provided a fertile field for the implementation of certain instructional programs (non-graded programs and continuous progress concept) as well as new instructional techniques (team teaching and programmed instruction).

II. CONCLUSIONS

Based on the analysis of the information and experience presented in this study, the following conclusions were drawn:

1. The released-time program is capable of being adjusted to each of the three scheduling programs considered in this study.
2. The most vital adjustment necessary to make the released-time program successful under flexible scheduling is the adjustment of teacher attitude toward the new programs involved.

3. Since there are weaknesses in every scheduling system considered in this study, as well as in the traditional system, it was concluded that the perfect schedule has not as yet been produced.

4. Proper assignments and diligent follow-through on preparation can compensate for lack of daily contact between teacher and pupil.

5. Schools with conflicting schedules could not operate harmoniously, especially when both are dependent upon the same student population. It is therefore concluded that the released-time program must accept and adjust to any scheduling program of the adjacent junior or senior high school.

6. If flexibility is desired, the daily demand concept of scheduling affords maximum opportunity for its achievement.

7. Better preparation resulted in schedule modification programs, especially the modular concept program and the daily demand program. This was due to the difference in class period lengths, class structure, and class size. It was concluded that better teacher preparation would result in better presentation and hence improved teaching.

8. Generally, the prolonged period would not be advantageous to the released-time program on a regularly recurring basis. It would, however, have advantages if either the extended or shortened period could be provided upon specific request.
9. Careful planning and handling of individual class devotionals and activities are mandatory for success in a scheduling program with a variable beginning and ending time for each class. Each teacher and his respective class become entirely independent of all others.

10. Instructional techniques such as team teaching and programmed instruction can be beneficial to the released-time program.

11. Teacher-student contact will remain the most vital motivating and teaching force.

III. RECOMMENDATIONS

As a result of this study, and assuming that it will be the desire of the administration of the released-time program to improve the program, the following recommendations have been made:

1. Steps should be taken to inform the administrators and teaching personnel of the released-time seminary program concerning trends which are taking place in schedule modification programs. Though some may consider such programs to be of a temporary nature, while they are in use the released-time program must be prepared to cope with them.

2. In the preparation of course outlines, audio-visual presentations, and other instructional materials, the released-time program should continue to anticipate the trends in public school programs. The competition for student time is keen, and the winner will be the program with the most to offer in this respect.

3. Future seminary buildings should be planned and constructed to accommodate the new instructional programs and teaching techniques.
Team teaching, small-group and large-group instruction, and individualized programs including programmed instruction are increasing in their scope and effectiveness. Facilities should be planned for such changes in the present teaching patterns.
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ABSTRACT

Whenever a public school modifies its scheduling program it has a direct effect upon any released-time program affiliated with the school. This study was undertaken, therefore, to determine the adjustment necessary in the released-time seminary program of the Church of Jesus Christ of Latter-day Saints in order to make that program compatible with three major flexible scheduling programs: (1) the Period Exchange of Rotating Period Program as used in the Cedar City High School, Cedar City, Utah, (2) the Modular Schedule as typified by the Stanford School Scheduling System (SSSS) and used in Roy High School, Roy, Utah, and (3) the Daily Demand Scheduling Concept as used by Brookhurst Jr. High School, Anaheim, California, and further developed and expanded to a computer program by Brigham Young University High School, Provo, Utah, under the title of Daily Demand Computer Scheduling (DDCS).

Findings of the study include the following: (1) the period exchange or rotating period schedule was the least complicated to implement while the Daily Demand Computer Schedule entailed the most drastic change, (2) the released-time seminary program of the Church of Jesus Christ of Latter-Day Saints functioned comfortably in connection with each scheduling program, (3) the loss, or probable loss, of daily teacher-student contact was considered as a major weakness in each concept, and (4) a common strength was the variety afforded the student in the pursuit of his daily schedule.

It was concluded that: (1) the released seminary program was capable of being adjusted to each of the scheduling concepts considered, (2) teacher attitude toward a new program was a most vital adjustment,
(3) no schedule was perfect, (4) the released-time program, if it
hopes to continue, must accept and adjust to any scheduling program the
adjacent junior or senior high school may adopt, (5) the prolonged
period, generally, would not be advantageous to the released-time
program on a regularly recurring basis, (6) instructional techniques,
such as team teaching, programmed instruction and others, can be
used beneficially in the released-time seminary program, and (7)
teacher-student contact will remain the most vital motivating and teach-
ing force.

It was recommended that the administration of the released-
time seminary program of the Church of Jesus Christ of Latter-day
Saints: (1) keep their teaching personnel informed about such
scheduling innovations, (2) anticipate such trends and programs in the
preparation of course outlines and other instructional materials,
and (3) plan and construct future seminary buildings to accommodate
the new instructional programs and teaching techniques.