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An Experiment to Determine if Teacher Preparation in a Small High School Can be Reduced by Alternating Class Scheduling

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AN EXPERIMENT TO DETERMINE IF TEACHER PREPARATION IN A SMALL HIGH SCHOOL CAN BE REDUCED BY ALTERNATE CLASS SCHEDULING

by

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John Carl Tuft

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by

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Utah State University, 1967

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The purpose of this study was to determine if by alternating certain classes biennially the number of different teaching preparations could be reduced thus decreasing the teachers' load. The study also attempted to ascertain the effect this type of scheduling had upon the attitudes of teachers and students toward these classes. A further attempt was made to determine if mixing students from two grade levels resulted in the younger student being penalized with respect to his cumulative grade point average.

The significant conclusions that can be drawn from the results follow:

Teachers, generally, thought well of the project and desires to participate in it. Although some teachers expressed reservations about the project there were none that could not be removed by correcting the problems expressed. At the conclusion of the study most were in favor of continuing the project.

By alternating classes biennially which were normally taught annually the class preparation load for teachers participating in the project was reduced and this basic quest of the project was, in fact, met.

Students were not aroused unduly by the experimental nature of the project but sensed the need for long-range planning and increased guidance in setting up their schedules. They did not object to being combined with other grade levels in the project classes. Contrary to administrative expectations, however, the younger students did tend to receive lower marks in the project classes.

Achievement progress as measured by the use of standardized tests revealed no significant difference between students in the experimental school and those students in the control school.

(61 pages)

INTRODUCTION

An educational revolution unique in the annals of history took place in the United States in the nineteenth century. Our forefathers set out to take children of diverse backgrounds and develop them into American citizens by giving them a basic education. As the country prospered and technology advanced, this education was later extended to include the years of secondary school. It is now being advanced into higher education. This educational revolution appears to have been quite successful, for nowhere but in the United States have so many been educated so well.

Always there has existed in our country a continuing quest, not only to provide equality of educational opportunity for all citizens, but also to provide constantly the quality of education made available to all of the people. We have made great progress in meeting these mandates. Recently, however, a number of individuals and groups have become quite vocal to improve the quality of secondary education. There are those who insist that the quest for excellence is not in harmony with the ideals of universal youth education developed during the past one hundred years. Some of these persons say that because it costs too much to provide quality education for everyone, there should be more rigorous selection of students to eliminate the unwilling and unfit. Others say that providing quality education for all

youth is too demanding, that it requires too many teachers, too many buildings, too elaborate curricular offerings, and that it costs too many dollars. These individuals and groups say that the times can afford only the education of the able and ambitious, and that the average and low ability do not matter too much.

There are also critics who insist that quality education demands more services to students and more efforts from them. They urge that students should be required to take more and tougher subjects, write more themes, do an increased amount of homework, and in general be required to have more commitment to quality learning. These critics would also recommend more guidance services so that schools could advise their students about appropriate courses and they could provide more challenging programs for the able students.

A concern of the administration and faculty of the South Sevier High School and the administration of the Sevier School District in providing quality education was the large number of daily preparations of teachers. It was felt that (1) several preparations created a pressure for the teacher's time, (2) the many different preparations needed of teachers affected their morale, (3) the need of teaching many different classes affected the holding power of the district in respect to its teachers, (4) the requirement of teaching several different classes created a hiring problem, and (5) to continue to be accredited by both the State and the North Western Accrediting Association, the district

needed to continually work toward the improvement of teachers' load.

During the 1960-61 school year the teachers at South Sevier High School averaged 5.1 preparations per teacher per day. During the 1961-62 school year the average was 4.73. In attempting to reduce the added load caused by excessive daily preparations, several approaches were discussed, such as : hiring teachers over a longer period of time to allow them additional time for planning, following commercially prepared lesson plans, reducing the curriculum offering, transporting teachers between schools and alternating class offerings. It was decided to proceed with the latter method on an experimental basis.

The objectives of this project were: (a) to reduce the number of class preparations per teacher in South Sevier High School by alternating the teaching of some classes on a biennial basis, (b) to determine if the proposed type of class scheduling allows students a greater or lesser degree of choice in registering, and (c) to determine what other advantages and disadvantages arise from breaking some traditional sequence of courses.

REVIEW OF LITERATURE

Although one may find many responses to the problem of quality education Weisse (35) suggests that those which appear to be reasonable responsible can with variation in degree and relative importance have some common media. According to Weisse the five steps to quality education include: (a) insistance that the teacher be competent in his teaching field, (b) financial reward based upon performance in the classroom, (c) a serious re-evaluation of educational policies regarding graduate study, (d) increased discipline in the professional courses of the college's education department, and (e) realistic teacher load and time for in-school preparation.

Elaborating on his fifth point, Weisse indicates that it is the responsibility of the school boards to realize that quality education is the product of good planning and preparation. He further points out that excessive teaching loads which require five or six preparations by the teacher and provision of little time for class preparation hinder quality education. W. D. Hegges, Director of Educational Research at the University of Virginia (13) alluding to this point states: "If teaching is really to improve in the secondary schools of this country, teachers must be given time. They must be given time to prepare lessons, time to read professionally, time to rest, and above all time to think." Additional focus and emphasis was made by President

Eisenhower's Advisory Committee (24), to the time factor in teaching. This committee pointed out the need for general improvement of the entire educational system, but singled out as vitally important the need to allow teachers to devote more of their time to teaching rather than administrative chores.

The N. E. A. (20) studying teacher load found that classroom teachers in the small high schools generally believe that they did not have sufficient time during the school hours for many of the duties related to instruction. About eight-one per cent of the classroom teachers indicated they did not have sufficient time during school hours for guidance and counseling, for helping students who were behind in their work, and for conferences with parents. About sixty-nine per cent said they did not have sufficient time for preparing reports, about seventy-three per cent said they did not have sufficient time for planning work, and about eight-five per cent said they did not have sufficient time for checking and grading papers.

In a job analysis and time study investigation by Buehring (5) aimed at learning more about the job of the secondary school teacher and to appraise concepts basic to teacher use, the following results were noted. Sixty-five per cent of the teachers time was devoted to professional activities. These were defined as those activities which require the teacher to draw upon his professional background and experience. Twenty-two per cent was occupied by activities which

were technical or clerical in nature. Thirteen per cent was residual in nature and was therefore grouped under miscellaneous.

Since time elapse alone was insufficient for answering all of the questions, observations by staff members as they times the teachers were included in the study. They concluded: (a) insufficient time is provided within the school day for lesson preparation; accordingly teachers do not devote sufficient time to lesson planning. Lesson planning, too, is hampered by a lack of materials and equipment. If the number of peripheral responsibilities of a technical-clerical nature could be reduced, teachers would have more time for instructive work. (b) There is a need for a new analysis of teacher and student roles. There is a need especially to determine the kinds of learning students can achieve by themselves, as well as a need to ascertain the things student learn by helping one another. (c) An understanding of the fact that adequate materials and equipment for teacher experimentation are an economy, rather than an expense, cannot be postponed if we are to systematize education through better use of both human and mechanical potentials.

The teaching assignment of teachers in small high schools often include as many different daily preparations as there are periods in the day. Rarely is a teacher in these schools assigned to two or more sections of a single subject. In addition the teacher's assignment includes a smorgasbord of responsibilities. At the elementary level,

because no "special! teachers are available, the teachers must teach everything that is taught. In addition the teacher is responsible for playground and hallway supervision, school lunch supervision and special programs. In most small schools no clerical help is available to the teacher for typing, duplicating, issuing supplies, or keeping records. At the high school level the full load of the usual fare of extra class activities (junior prom, school plays, senior trip, graduation, awards program, etc.), becomes the responsibility of the small staff of eight to ten teachers. The N. E. A (20) reports that classroom teachers in the small high schools sponsored an average of two extra class activities during 1960-61. About 42 per cent of the classroom teachers sponsored four or more. School size, type of organization, school accrediation status, and sex of teachers made little difference in the median number of extra class activities sponsored.

Commenting on teacher overlaod in the small school, Stutz (32) cautions that it would be a mistake to assume that teacher load difficulties occur only in a rapidly growing or tax-strained district. Undesirable conditions can exist even under stable school circumstances unless care is taken to understand and deal with the problems that arise.

Pointing out the illusiveness and intangibility of this problem for the administrator, he further cautions that there is often no awareness of teacher load until it suddenly manifests itself, negatively, as overload. If other pressing problems are existent the solution becomes

more difficult. The resulting complications of discouragement, strained staff relations and in some cases, the lowering of standards, must also be dealt with.

Improving the effectiveness of the teacher and the best utilization of his time and compentencies are indeed challenging problems in the small school.

It is natural for a teacher to want to teach under conditions and circumstances which will give them the best possible chance of reaching the educational objectives of the school and the district. These conditions, in sum, might be called the elements of teacher load. A simple listing of some of these elements by the California Teachers Commission on Educational Policy (6) indicates the scope of the problem: (a) class size, (b) grouping, (c) auxiliary professional services, (d) professional training necessary, (e) out-of-class assignments, and (f) number of subject preparations. It is well to recognize also that there is a humanistic facet to teacher load as well as the mechanical. The Commission further states that no single formula or set of standards for teacher load can be applied to all teaching levels or situations. According to their philosophy a variety of criteria should be used to determine what is desirable in each particular case and that a test of adequacy of solution should result in a sound classroom situation in which a fully qualified teacher is enabled to help each child develop his capacities to the fullest.

Since teaching load per se covers many facets, only the humanistic side and number of subject preparations will be considered in this study. These are the two areas of concern to the administration and serve as justification for the research.

Ask any superintendent, "How can we attract and retain good teachers?" and the answer is usually — pay more money! Yet, almost without exception, studies of the factors influencing job satisfaction — in teaching as in other vocations — demonstrate that remuneration does not rank first.

Certainly salaries are a powerful factor. It is equally certain that teachers' salaries have lagged behind the general rise in personal income. But Twentieth Century Fund (25) studies revealed that some of the industries most plagued by strikes are among those that pay the highest wages. Thus the "economic man" concept has become untenable. This notion held that all a worker wanted from his job was a fat salary and generous welfare provisions. Other surveys have also exploded this myth. After ten years of polling adult workers, Elmo Roper concluded that the four chief desires of workers of our society are: (a) security, (b) a chance to advance, (c) humane treatment, and (d) dignity.

The famed Western Electric experiments (28) diverted management's attention from a materialistic to a humanistic emphasis in personnel administration. It is noteworthy that these experiments began with an attempt to measure the effects of lighting conditions upon

a small number of carefully observed workers. As lighting improved, individual output accelerated. As a check, it was decided to permit lighting conditions to deteriorate again. The investigators were confounded when production and apparently morale continued to rise. It was finally concluded that certain social factors involved in the observation process were more effective determinants of productivity and morale than was the physical environment. The workers were pleased with the close attention and importance attached to their work. Their social rather than their material needs were being gratified.

In reduction of teacher load the individual and group needs are important variables which the successful administrator must recognize, attempt to evaluate, and then formulate some type of approach to meet and deal with them. Wynn (38) in discussing teachers and job satisfaction elaborates on seven basic needs, six of which are to some degree innate in all adult workers. He adds a seventh and suggests it is neither innate nor universal but nevertheless imperative in a free society.

The broadest and most basic of all needs is security. Considerable attention has been given to the problems of salary, sick leave, retirement, and other welfare provisions as cornerstones of security. The widespread extension of tenure laws in public education has made significant contribution toward security. However, as Wynn (38) points out our longing for security involves far more than economic security. There are other less evident facts.

The teacher should feel secure against attack, not only attack on the person but attack on the school system as well. Thus one might inquire: Does the climate protect the teacher from dishonest attack and unfair investigation? Does our educational leadership insist that teacher performance be assessed in accordance with American tradition of justice and fair play?

The teacher should also feel secure against stratification and division. Are status differences within the group minimized? Does the group perceive differentiation in terms of function rather than in terms of status and privilege? Is there an equal distribution of obligation, load and power? Very often teachers complain less about teacher load than they do about inequities in the distribution of the load.

The teacher needs to feel secure against sudden change. The process of change needs to be carefully engineered. A check in this respect might be: Are teachers given advance information on contemplated changes? Are persons who stand to be affected by change given an opportunity to participate in planning proposed changes and in meeting the pressures that result from change?

The teacher needs to feel secure against secrecy and double dealing. The school climate should subject most issues, data and action to the "light of day test." Kant (25) stated this principle:

> All actions relating to the rights of other men are wrong if the maxims from which they follow are inconsistent with publicity. Conversely, all maxims

> Which require publicity, in order that they may not fail to attain their end, are in agreement both with right and politics. (Kant, 25, p. 32)

Thus policies and actions which depend upon secrecy for success fail Kant's test of fair dealing. Lacking information, people tend to fill the vacuum with rumor which is destructive to morale.

One of the greatest basic human urges is the need for social approval and recognition. Dostoevski in "The House of The Dead" concludes that if it were desired to reduce a man to nothing, it would be necessary only to give his work a character of uselessness. The Nazis demonstrated this device when they broke the morale of prisoners by having them carry rocks from one site to another and back again the next day. Are teachers helped to feel that their work is extremely useful? Is the desire for mastery and recognition satisfied or repressed by personnel policy?

Another basic urge is the need to belong. Satisfying identification of the individual with the group is one of the major components of esprit de corps. Teachers should feel a personal stake in the school system as a whole. Piecemeal vested interests should be discouraged and loyalty to the whole enterprise should be fostered. Do teachers emjoy the satisfaction that comes from successful accomplishments? Does the staff function as a unit, a well balanced team? Do teachers study problems which they helped to identify, or are problems identified for them by the administration. ?

There are times when teachers differ honestly and substantially with their administrators. The teacher should be able to perceive acceptable channels for appeal, without the threat of reprisal, even though this right may be exercised quite rarely.

One of the important clusters of need, widely recognized but frequently neglected, is the need for specific job knowledge. A work climate that is unplanned and unregulated is chaotic laissez-fairism, not democratic. Freedom is not the absence of planning. Conscious planning should be addressed to such concerns as efficient labor, definition of functional roles, definition of realistic levels of aspiration, maintenance of equilibrium, and assignment of realistic and equitable work loads.

The seventh need of teachers alluded to by Wynn (38) encompasses the efficacy of democratic action. We have come to believe that there is nothing predestined about democracy but rather that the battle for freedom must be won anew with each generation. The nation's teachers urgently need to observe daily the successful operation of democratic practice. Students in the classroom are not likely to be imbued with the values of democracy in a climate of autocratic school administration.

Teachers, entrusted with the supreme responsibility of developing young citizens in a democratic society, should constantly participate in the demonstration that: (1) Most groups are capable of solving their own problems upon the level where they are able to use such solutions.

(2) Group decisions are more easily, more thoroughly, and more permanently implemented than individual decisions are. (3) Group decisions foster greater socialization, release more creative initiative, and nurture faster individual growth than autocratic decision making.

Forward looking educational leaders are constantly helping their teachers to better adjustment, satisfaction, creativity, production and growth through the cooperative assessment, exploration and redirection of the climates in which they live and labor. To do so is to attract and retain good teachers.

Another important factor which affects the teaching load is the number of different preparations which a teacher must make. David (8) in the report of teaching load in the high schools of the North Central Association showed that eight per cent of the teachers made but a single preparation while eight per cent made five or more preparations. On the average of 11,000 teachers reported making 2.78 preparations per day. According to Davis, a teacher spends about one hour per day in preparations for teaching all subjects. This means that each teacher devotes about 20 minutes to each preparation. Therefore, if all other things are equal, that teacher who has but one preparation to make will have a load about 40 minutes lighter than the teacher who has five or more preparations.

Woody and Bergman (35) in their investigation on measurement and equation of teaching load in high school found that the amount of time

required by a teacher teaching three distinct subjects is considerably more than that required by the teacher having one or two subjects. However, there is no significant difference in the amount of time spent by teachers of two subjects.

Researching teacher load the N. E. A. (20) found that most classroom teachers in small high schools taught in more than one subject field. About 39 per cent taught in one field; 42. 8 per cent in two and 18. 4 per cent in three or more subject fields. Table 1 shows that the number of different fields covered in the teacher's assignment varied with school size: 22. 9 per cent of the classroom teachers in the smallest of the small high school, but 55. 3 per cent of the classroom teachers in the largest were assigned subjects from only one subject field. About 33 per cent of the classroom teachers in the smallest of the small high schools but only 5. 1 per cent of the classroom teachers in the largest were assigned subjects from three or more subject fields. Men teachers were assigned subjects in a greater number of different fields than women teachers in the small highschools: 22. 5 per cent of the men teachers but 12. 2 per cent of the women teachers were assigned subjects in three or more different fields.

This study also revealed that school size is closely associated with the number of different subject preparations assigned to classroom teachers. It can be noted that in Table 2 classroom teachers in the

Table 1. Number of different subject fields taught by teachers in small high schools, 1960-61.

Number of subjects fields taught	Per cent of teachers, by school enrollment			Men teachers	Women teachers	Total	
						Number	Percent
1 Subject field	22.9%	39.8%	55.3%	34.5%	45.2%	407	38.8
2 Subject field	44.3	44.0	39.6	43.0	42.6	450	42.8
3 or more subject fields	32.8	16.2	5.1	22.5	12.2	193	18.4
	100.0%	100.0%	100.0%	100.0%	100.0%	1,050	100.0%

Total number reporting 1,050.

Table 2. Number of different subjects taught by teachers in small high schools, 1960-61.

Number of subjects taught	Percent of teachers, by school enrollment			Men teachers	Women teachers	Total	
	1-99	100-199	200-299			Number	Per cent
1 subject		0.5%	0.7%	0.2%	0.7%	4	0.4
2 subject	0.6%	1.7	7.6	2.7	3.5	32	3.1
3 subject	10.6	20.7	26.2	17.7	21.0	200	19.1
4 subject	26.8	29.8	40.2	30.8	33.4	334	31.8
5 subject	34.9	30.5	16.0	27.9	27.6	291	27.7
6 subject	19.9	11.5	5.0	14.6	8.9	129	12.3
7 subject	5.4	4.1	4.0	5.3	3.3	47	4.5
8 subject	1.8	1.2	0.3	0.8	1.6	12	1.1
	100.0 %	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Total	341	443	301	428	428	1,049	
Median	5	4	4	4	4	4	

smallest of the small high schools had a median of five different preparations while those in the largest had a median of four different preparations. About 27 per cent of the classroom teachers in the smallest high school had six or more different preparations while only 9.3 per cent had an equivelent number.

In summary, teacher load in terms of preparation and time increases as the size of the school decreases. In Utah where the population is highly concentrated in a few areas, the problem of load is indeed pressing in the small rural school. The need for study toward adequate solutions is evident. A review of the literature reveals that there has been a limited number of studies in this area and thus forms the basis for this study.

The postulate underlying this plan for research is that through alternating the teaching of some classes on a biennial basis the number of teacher subject preparations can be reduced allowing teachers more time to prepare. It is believed that by giving t achers added time for perparation they will be able to effect a more organized approach to the preparation and presentation of the subject thereby enriching their teaching and enhancing learning.

HYPOTHESES

1. In effecting an alternating schedule the traditional teaching sequence of subject presentation will be broken. However, it is hypothesized that the greater time allowed for teacher preparation will result in significant gains in student achievement.

2. Through the use of the alternating schedule students from different grade levels will be combined. It is hypothesized that students from a lower grade level will achieve equally with students from the higher grade level as evidenced through the use of cumulative grade point averages and the Chi Square technique.

3. It is hypothesized that teachers will have a favorable attitude toward experimentation in the reduction of the number of class preparations per teacher.

4. It is hypothesized that student attitude toward such experimentation, even though course sequences are altered, will be favorable.

PROCEDURE

A check was made on the total class offering of the school. Classes were then selected that showed possibilities of changing sequence of class preparation improvement. A two-year scheduling sequence was outlined and the first phase was placed into effect in the fall of 1962. At that time, English C, which was for juniors, American History and Algebra II were deferred for one year. English D, normally for seniors, and American Problems were made available to both junior and senior students. Geometry was offered to all students, sophomores through seniors. In order to determine the effect this arrangement might have on the achievement of juniors and seniors at the South Sevier High School a control school was established at the North Sevier High School. Students at both schools were tested at the beginning of the year (1962) in social studies, language usage and literature. The tests selected were the Sequential Test of Education Progress in Social Studies, the Cooperative English Test and the Cooperative Literary Comprehension and Appreciation Test. The tests were administered by the counselor and given to all students. An alternate form of the same test was administered the same students at the end of the 1963-64 school year. Comparisons were then made.

Student registration procedures at South Sevier High School provided for student preferences being expressed in writing in the spring of the year. The ensuing year's schedules were then prepared on the basis of those choices. An attempt was made to determine to what extent the experiment affected the students obtaining their choice of classes. It is pertinent to note here that for a number of causes this aspect of the project could not be studied except through comment of students.

It was determined that opinions of both teachers and students about the project and related matters be ascertained. This was done through interview-questionaire techniques. All teachers at the South Sevier High School were interviewed at the start of the first year of the program, at the end of the first year, and at the end of the second year. Comparisons of their opinions were then made.

Student opinion was sampled through a random sampling technique utilizing one-fourth of the boys and girls in the high school. Grades nine through twelve were included the first year. The last three grades were included the second year, thus enabling the interviewer to utilize the same students for the two years except the seniors of the first year group.

There was a concern that with students of various grade levels in classes normally reserved for one or another grade level that students from lower grades might not receive a normal proportion of "A's", etc.

Therefore, grades received by students in the various classes involved in the project were analysed to compare the grade distribution by grade level and sex.

Daily class preparations for teachers

One of the major purposes of the project was to see if by alternating classes on succeeding years the daily preparations for classes by certain teachers could be reduced. The material regarding the number of daily class preparations per teacher is presented in Table 3.

It is noted in the table that teacher A, C, E, H, and I were involved in the project plans. Teachers E. H. and I, as a direct result of the program, had their daily class preparations reduced by one. The number of preparations for teachers A and C remained the same. However, it is important to note that in both instances, the alternating schedules did in fact reduce the daily preparations by one each, but new offerings were introduced and taught by these teachers. Hence, as a result of the program, the school's curriculum was enriched.

A study of the data on Table 3 also indicates that there was a general, gradual reduction of the average load of teachers from 4.73 in 1961-62, to 4.45 in 1963-64.

Table 3. Daily class preparations per teacher.

Teacher	Number 1961-62	1962-63	1963-64
[a]A	3	3	3
B	5	5	5
[a]C	5	5	5
D	2	2	2
[a]E	5	4	4
F	6	6	6
G	6	6	6
[a]H	4	3	3
[a]I	5	5	4
J	6	6	6
K	5	5	5
Average	4.73	4.55	4.45

[a]Participants in the project

Achievement test data

A major concern of the study was to see to what extent student achievement would be affected through the use of the alternating schedule. To determine this, comparisons are made between the difference scores on the pre and post tests at the control school, North Sevier, and the experimental school, South Sevier. The tests used were the Sequential Test of Educational Progress, Cooperative Literary Comprehension and Appreciation Test and the Cooperative English Test.

The means, standard deviations and standard errors of measurement are presented in Tables 4, 5, and 6. Testing of the difference between the independent means in social studies, literature, and english indicate that there was no significant difference in the gains made in the experimental school over those made by the control school.

These results indicate that alternating the normal teaching sequence of courses in these areas does not affect the academic achievement of the students. They do not support the second part of the hypotheses that increased time for teacher preparation will result in increased student achievement.

Marks earned by students in project courses

A concern of the school authorities in relation to the project was whether in combining students of different grade levels in classes normally composed of student's from one grade level students in the

Table 4. Comparison of two schools on the basis of gain in achievement (differences between pre and post test scores) on the Sequential Test of Educational Progress in Social Studies.

School	Mean gain	Standard deviation	Standard error of mean	t
Experimental	4.98	7.95	1.24	
Control	4.77	8.98	1.35	
Difference	.21	1.05	1.61	.13

Table 5. Comparison of two schools on the basis of gain in achievement on the Cooperative Literary Comprehension and Appreciation Test.

School	Mean	Standard deviation	Standard error of mean	t
Experimental	4.75	7.64	1.21	
Control	3.66	6.49	.98	.74
Difference	1.09	1.15	1.48	.74

Table 6. Comparison of two schools on the basis of gain in achievement on the Cooperative English Test.

School	Mean	Standard deviation	Standard error of mean	t
Experimental	1.94	5.34	.892	
Control	3.72	4.84	.737	-1.09
Difference	1.78	.50	1.63	1.09

lower grades would be penalized in the grading procedures. In other words, would juniors, for example, earn their share of "A's" when competing with seniors in the class.

A comparison of grades earned by student's in the courses of the project for two years are presented in Tables 7 and 8. For the year 1962-63 the courses involved were English D (normally for seniors), American Problems (normally for seniors), and Geometry (normally for juniors). For the year 1963-64 the courses involved were English C (normally for juniors), American History (normally for juniors), Algebra II (normally for sophomores).

For the courses in 1962-63, it appears that juniors (or sophomores) received the same proportionate amount of "A's" as compared with seniors except in English D. In both English D and American Problems, the juniors' total grade point average was below the grade

Table 7. Comparison of marks earned by students for project course in 1962-1963 by class standing.

Class	Number			Grade														Grade point Average		
				A			B			C			D			F					
	B[a]	G[a]	T[a]	B	G	T	B	G	T	B	G	T	B	G	T	B	G	T	B	G	T
English D																					
Seniors	15	28	43	3	12	15	10	14	24	2	2	4	0	0	0	0	0	0	3.07	3.36	3.26
Juniors	22	25	47	3	6	9	8	13	21	7	5	12	4	1	5	0	0	0	2.45	2.96	2.72
Totals	37	53	90	6	18	24	18	27	45	9	7	16	4	1	5	0	0	0	2.70	3.17	2.98
American Problems																					
Seniors	15	15	30	0	8	8	5	3	8	5	2	7	4	2	6	1	0	1	1.93	2.94	2.45
Juniors	20	27	47	1	9	10	6	8	14	4	8	12	5	2	7	4	0	4	1.75	2.52	2.40
Totals	35	43	77	1	17	18	11	11	22	9	10	19	9	4	13	5	0	5	1.83	2.91	2.42
Geometry																					
Seniors	8	2	10	0	1	1	2	0	2	3	0	3	1	1	2	2	0	2	1.62	2.50	1.80
Juniors	12	7	19	2	2	4	4	2	6	3	2	5	3	1	4	0	0	0	2.42	2.43	2.42
Sophomores	13	7	20	0	2	2	1	3	4	12	2	14	0	0	0	0	0	0	2.07	3.00	2.40
Totals	33	16	49	2	5	7	7	5	12	18	4	22	4	2	6	2	0	2	2.09	2.70	2.28

[a] B = Boys, G = Girls, T = Total

Table 8. Comparison of marks earned by students in project courses in 1963-1964 by class standing.

Class	Number			Grades													Grade point Average		
				A			B			C			D			F					
	B[a]	G[a]	T	B	G	T[a]	B	G	T	B	G	T	B	G	T	B	G	T	B	G	T
English C																					
Senior	22	17	39	1	3	4	7	8	15	9	5	14	4	1	5	1	0	1	2.13	2.76	2.41
Junior	27	29	56	0	3	3	5	10	15	17	16	33	4	0	4	1	0	1	1.96	2.55	2.26
Totals	49	46	95	1	6	7	12	18	30	26	21	47	8	1	9	2	0	2	2.04	2.63	2.32
American History																					
Seniors	22	24	46	1	4	5	11	9	20	7	11	18	3	0	3	0	0	0	2.45	2.70	2.53
Juniors	27	29	56	1	3	4	5	12	17	17	12	29	4	2	6	0	0	0	2.11	2.55	2.33
Totals	50	53	102	2	7	9	16	21	37	14	23	47	7	2	9	0	0	0	2.26	2.62	2.45
Algebra II																					
Juniors	13	1	14	2	1	3	5	0	5	4	0	4	2	0	2	0	0	0	2.53	4.00	2.09
Sophomores	9	11	20	0	9	9	3	2	5	5	0	5	1	0	1	0	0	0	2.22	3.82	3.02
Totals	22	12	34	2	10	12	8	2	10	9	0	9	3	0	3	0	0	0	2.40	3.83	2.91

[a] B = Boys, G = Girls, T = Total

point average of seniors. This was especially marked in English D classes. In Geometry, on the other hand, seniors did the poorest in regard to marks received. Sophomores and juniors were approximately the same except that the great bulk of "C" marks were received by sophomores. Results from combining juniors and seniors reflect a grade point average of 2.34 to 2.40 favoring the sophomores.

In 1963-64, the pattern was similar for 1962-63. In both English C and American History the juniors' grade point averages were below the seniors' and below the class average. Low marks were comparable, but seniors received, proportionately more of the high marks ("A's" and "B's"). In Algebra II, the sophomores received more "A's" than the juniors and had a better overall grade point average (3.02 compared to 2.09).

Generally for both years, it can be noted that girls fared better than boys in regard to marks received. Although grade point averages favored the higher grade level student, the results in Tables 9 and 10 indicate that these differences are not statistically significant at the 5 per cent level of confidence. Only one of the ^{2} tests was within the chance expectancy and was in the direction of that which was predicted.

Table 9. Proportionate comparison of observed and expected marks earned - 1962-63.

	A		B		C		D and F		
	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Total
English D									
^{2} = 6.72									
Seniors	16.7	12.8	26.7	23.9	4.4	8.5	0.0	0.0	47.8
Juniors	10.0	13.9	23.3	26.1	13.3	9.2	5.6	5.6	52.2
	26.7		50.0		17.7		5.6		100
American Problems									
^{2} = 2.32									
Seniors	10.4	9.1	10.4	11.1	9.0	9.6	9.1	9.1	38.9
Juniors	13.0	14.3	18.2	17.5	15.6	15.0	14.3	14.3	61.1
	23.4		28.6		24.6		23.4		100
Geometry									
^{2} = 16.9									
Seniors and juniors	10.2	8.4	16.4	14.6	16.4	26.7	16.4	9.7	59.4
Sophomores	4.0	4.0	8.1	9.9	28.5	18.2	0.0	6.7	40.6
	14.2		24.5		44.9		16.4		100

[a] Significant at 5 per cent level of confidence

Table 10. Proportionate comparison of observed and expected marks earned - 1963-64.

	A		B		C		D and F		
	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Total
English C									
$\chi^2 = 5.71$									
Seniors	4.2	3.0	15.8	13.0	14.7	20.3	6.3	4.8	41.0
Juniors	3.2	4.4	15.8	18.6	34.7	29.1	5.3	6.8	59.0
	7.4		31.6		49.4		11.6		100
American History									
$\chi^2 = 2.33$									
Seniors	5.0	4.1	19.5	16.2	17.6	20.7	3.0	4.1	45.1
Juniors	4.0	4.9	16.5	19.8	28.4	25.3	6.0	4.9	54.9
	9.0		36.0		46.0		9.0		100
Algebra II									
$\chi^2 = 7.30$									
Juniors	8.9	14.6	14.7	12.1	11.7	10.9	5.9	3.6	41.2
Sophomores	26.5	20.8	14.7	17.3	14.7	15.5	2.9	5.2	58.8
	35.4		29.4		26.4		8.8		100

FINDINGS

Teacher attitudes about the project

The attitude of teachers about the project and other related material, are presented on Table 11. All of the teachers teaching at the high school were involved in the interview whether they were participating in the project or not. The number of teachers totaled eleven.

At the onset of the project only three teachers were unfamiliar with its nature. New teachers were apprised of the project and at the final interview, all teachers indicated a good knowledge of the purposes and procedures of the project.

At the start of the project and at the beginning of the second year nine teachers were generally or highly favorable to the project with two being generally unfavorable. At the close of the project one teacher changed his favorable attitude so that there were eight favorable and three not favorable to the project. Of the latter, two teachers were involved in the project and one was not.

About fifty per cent had reservations about the project. The reservations varied in nature from the Fall of 1962 to the Spring of 1964. At the interview at the start of the project most reservations had to do with the concern that some teachers would benefit by having

Table 11. Teacher opinion about the project.

Item	Response	Fall 1962	Spring 1963	Spring 1964
1. Do you understand the project?	Yes	8	11	11
	No	3	0	0
2. What is your attitude about the project?	Highly favorable	7	5	6
	Generally favorable	2	4	2
	Generally unfavorable	2	2	3
	Very much against	0	0	0
3. Are there reservations about the project?	Yes	6	5	6
	No	5	6	5
4. Have you detected any student opinion of any kind about the project?	Yes	6	5	7
	No	5	6	4
5. Do you anticipate the number of your daily preparations will be decreased?	Yes	5	2	4
	No	6	9	7
6. Do you see any problems in the alternating schedule?	Yes	7	10	6
	No	2	1	5

Table 11. Continued.

Item	Response	Fall 1962	Spring 1963	Spring 1964
7. Do you think you would prefer to (A) teach copy from material?	A	7	7	8
	B	4	4	3
8. Do you think the project should continue?	Yes			8
	No			3

fewer preparations than others and that the library materials would be insufficient for increased number of students in certain classes. At the close of the project the reservations held by teachers had to do with mixing junior and senior students in one class with the span between the less able junior students and the more able senior students being too great, and that students may not get some classes desired because of the alternating schedules. Another reservation expressed was that even though the sections of a subject were increased to reduce overall class preparations, the sections could not be kept parallel and in effect class preparations were not really reduced.

Teachers were asked if they detected students' talking about the project. This was not to ascertain whether the student comments were favorable, but whether the students reflected interest in the project by their talking about it. About half of the teachers reported they heard students talking but that most of their comments were neutral in position of the project. Apparently, if students made remarks about the project, they did not make many of them in the presence of teachers.

The number of teachers anticipating reduction in the number of daily preparations gradually resolved itself to those actually participating in the program. It can be noted that in the interview held in the spring, 1963, only two teachers looked forward to a reduction in daily preparations as a result of the project. However, at the end of the project, four felt their load could be reduced.

More teachers the first year saw problems in the projects program of alternating schedules of certain classes, e. g. , several sections of American History one year with no sections of American Problems and then reversing itself for a succeeding year, than during the second year. The problems most of them envisioned are reported in the paragraph above dealing with reservations about the project. In addition, however, some felt teachers might have difficulty maintaining proficiency in certain fields when they taught them every other year, e. g. , chemistry and physics, geometry and algebra II, etc.

Yet, with all of the above reservations and problems noted, when asked if they would prefer to teach two sections of the same subject one year, then two sections of another subject the alternate year making two less preparations in any one year, or to teach two different classes each year, seven teachers the first year and eight at the end of the second year preferred fewer subjects per year.

At the last interview held in the Spring, 1964, the teachers were asked if they thought the project should continue. Almost surprisingly, eight teachers felt that the project should continue with further study and only three felt that it should not. Of the latter three, however, two were involved in project and one was not.

Student attitudes about the project

As indicated in the precedure section of the thesis a sampling of students were interviewed two times to ascertain student attitudes about the project. Table 12 presents in detail the material relating to this area. The same students of the 9th, 10th, and 11th grades interviewed the first year were followed up the second year. The 12th grade students of the first year, of course, graduated. The reduction in number of students interviewed the second year was caused by students moving or dropping out of school for various causes.

Towards the end of the first year 39 of the 57 students were not aware of a project of any nature being conducted in the school. The 11th grade students seemed more aware than the other grades. At the end of the second year it can be noted that all of the students were then aware of the project. In addition, as indicated in the table, the same number of students as above did not understand the nature of the project the first year, while all understood the factors of the project the second year.

The student's themselves seemed to like combining student's from various grade levels in a class that heretofore have been comprised of students from one grade level only. Eighty-seven per cent of the student's interviewed the first year felt it was a good idea to combine the students, and eighty-four per cent felt good about it at

Table 12. Student opinion about the project

		Grade												
		9th			10th			11th			12th			
		B[a]	G[a]	T[a]	B	G	T	B	G	T	B	G	T	Total
Spring 1963														
Are you aware of the project at S. S. H. S.?	Yes	0	1	1	1	1	2	6	5	11	1	3	4	18
	No	9	6	15	6	6	12	1	2	3	5	4	9	39
Do you understand the project?	Yes	0	2	2	0	1	1	3	5	8	4	3	7	18
	No	9	5	14	7	6	13	4	2	6	2	4	6	39
Do you think combining students from two or three grades is good?	Definitely good	0	1	1	0	3	3	1	3	4	2	0	2	10
	Generally good	6	5	11	5	4	9	6	4	10	4	6	10	40
	Gen. not good	3	1	4	2	0	2	0	0	0	0	1	1	7
	Def. opposed	0	0	0	0	0	0	0	0	0	0	0	0	0
How do you feel about changing the order of some courses?	Definitely favor	0	0	0	0	0	0	0	2	2	1	2	3	5
	Gen. favorable	9	6	15	7	7	14	7	5	12	3	3	6	47
	Gen unfavorable	0	1	1	0	0	0	0	0	0	2	2	4	5
	Def. opposed	0	0	0	0	0	0	0	0	0	0	0	0	0
Do you think you will do as well academically under the project plan?	Very sure	0	0	0	0	2	2	1	2	3	1	1	2	7
	Think so	7	7	14	6	4	10	5	4	9	4	4	8	41
	Not sure	2	0	2	1	1	2	1	1	2	1	2	3	9
	Def. will not	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 12. Continued.

		Grade												
		9th			10th			11th			12th			
		B[a]	G[a]	T[a]	B	G	T	B	G	T	B	G	T	Total
Do you feel the project will (has) affect(ed) your choice of classes?	Sure it will	0	0	0	0	0	0	0	0	0	0	0	0	0
	Think it will	1	1	2	2	4	6	0	1	1	1	2	3	12
	Think it won't	5	8	13	3	3	6	3	5	8	1	2	3	30
	Sure it won't	0	1	1	2	0	2	4	1	5	4	3	7	15
Do you like the project?	Favorable	9	7	16	6	7	13	7	7	14	5	6	11	54
	Unfavorable	0	0	0	0	0	0	0	0	0	0	0	0	0
	Reservations	0	0	0	1	0	1	0	0	0	1	1	2	3

Table 12. Continued.

		Grade									
		10th			11th			12th			
		B	G	T	B	G	T	B	G	T	Total
Spring 1964											
Are you aware of the project at S. S. H. S. ?	Yes	7	4	11	7	8	15	6	6	12	38
	No	0	0	0	0	0	0	0	0	0	0
Do you understand the project?	Yes	7	4	11	7	8	15	6	6	12	38
	No	0	0	0	0	0	0	0	0	0	0
Do you think combining students from two or three grades is good?	Definitely good	0	2	2	3	3	6	5	0	5	13
	Generally good	3	2	5	4	5	9	1	4	5	19
	Gen. not good	4	0	4	0	0	0	0	2	2	6
	Def. opposed	0	0	0	0	0	0	0	0	0	0
How do you feel about changing the order of some courses?	Definitely favor	0	0	0	0	3	3	1	1	2	5
	Gen. favorable	7	4	11	7	5	12	5	5	10	33
	Gen. unfavorable	0	0	0	0	0	0	0	0	0	0
	Def. opposed	0	0	0	0	0	0	0	0	0	0
Do you think you will do as well academically under the project plan?	Very sure	1	3	4	4	4	8	3	3	6	18
	Think so	6	1	7	3	4	7	3	3	6	20
	Not sure	0	0	0	0	0	0	0	0	0	0
	Def. will not	0	0	0	0	0	0	0	0	0	0

Table 12. Continued

		Grade									
		10th			11th			12th			
		B	G	T	B	G	T	B	G	T	Total
Do you feel the project will (has) affect(ed) your choice of classes?	Sure it will	0	0	0	0	1	1	0	0	0	1
	Think it will	1	0	1	0	3	3	0	0	0	4
	Think it won't	6	3	9	2	4	6	2	3	5	20
	Sure it won't	0	1	1	5	0	5	4	3	7	13
Do you like the project?	Favorable	5	4	9	7	7	14	6	5	11	34
	Unfavorable	0	0	0	0	0	0	0	0	0	0
	Reservations	2	0	2	0	1	1	0	1	1	4

[a] B = Boys, G = Girls, T = Total

the end of the second year. Generally, the older the student, as noted in the table, the more positive he was about the worthwhileness of combining different grade level students.

In regards to the students' feeling about the favorability of changing the order of sequence for classes involved in the project, the material of the table indicated that the large majority, 52 out of 57 the first year and all 38 interviewed the second year, favored the change. Some students indicated that for very little inconvenience to students, teachers were helped. Some students commented that in some instances it helped them in relation to other classes. However, other students indicated the "old Way" kept a better order in their learning sequence.

There was concern expressed by nine students the first year that they might not do as well academically in their classes in the project. However, at the end of the second year, 18 students felt they were sure they would do as well and 20 thought they probably would do as well. None had very serious doubts about their academic success under the project the second year of the program.

During the first year of the plan 12 of the 57 students interviewed felt the arrangement of classes in the project would affect their being able to obtain classes of their choice. The balance felt they would not be affected. The pattern is not so clear the second year of the program.

While a larger proportion felt their choice of classes had not been affected, there were still four who thought their choices had been affected and one who was positive his choice had. However, most felt that if proper guidance were given at the ninth grade level that this would not be a problem.

The attitude of the students at both interviews was in favor of the project. No student reported himself as unfavorable. However, three the first year and four the second had reservations. These reservations were not expressed orally to the interviewers.

DISCUSSION

One of the major purposes of this study was to determine whether by alternating classes on succeeding years the daily preparation for classes by certain teachers could be reduced. The average preparation load of teachers in the school was gradually reduced from 4.73 in 1961-62 to 4.45 in 1963-64. In reality this reduction was actually greater than the statistics indicate. In one instance when preparation load was decreased, the number of teaching periods was also decreased. Because of this reduction the administration chose to enrich the curriculum by introducing a previously unavailable course.

Achievement testing results between the gains made by students in the experimental and control school revealed no statistically significant difference. It was hypothesized that if teachers were given more time to teach it would have a positive effect on students achievement. The results do not substantiate this position. One possible reason may be due to the small amount teacher preparations were actually decreased. Since this was very minimal, only about .5 preparations, teachers may not of had enough time to actually effect methods and procedures which would result in greater quality education. Another contributing variable may have been in the type of tests selected and the interim between pre

and post tests. The tests used in the study were primarily fact and information recall. Utilizing the alternating schedule extended the time lapse between completion of the course and testing to a year. It would have possible yielded more valid results if the testing could have been administered following the completion of the course work thereby minimizing possible residual effects.

Differences reflected in the project classes in the cumulative grade point averages of lower and upper level students generally favored the more chronologically mature student. However, when the Chi Square technique was applied, the results indicated no statistically significance except in the geometry class where significance was observed at the 5 per cent level favoring the lower level student. It can be noted, then, that the less mature or lower level student did compete successfully in these classes. Generally, for the two years of the study, girls fared better than boys in marks earned.

At the outset of the experiment some teachers were concerned that only a few of the teachers might profit from the reduction of preparations; some felt that the library facilities would be insufficient for the increased number of students in certain classes. As teachers became more familiar with the study, the first reservation diminished because they began to see ways in which their areas could be included. Because increased library funds from the state and district made available more materials in the library, the second concern did not materialize.

At the conclusion of the study the reservations involved the increased span of ability levels brought about through grouping two grade levels together and the inability to be more consistent in keeping the different sections of a subject together. One teacher felt that alternating his classes caused him to lose some proficiency in the subject area when the interim between instruction was increased to every other year. The teachers felt that the reservations could be worked out; they were in favor of continuing the experiment.

The students themselves seemed to like combining various grade levels. Many expressed the feeling that they thought the heterogenous grouping allowed them to become better acquainted with other students in the school; the grouping perhaps added to school spirit. In regard to their feelings about the favorability of changing the order of sequence for classes, there were very little negative attitude reflected. Alternating classes did require them to do more long range planning in terms of their vocational goals and class schedules.

Two administrative problems developed during the interim of the study which were not anticipated at its onset. The first produced a financial strain on the textbook budget due to the fact that the books were only used biennially. This problem could be resolved if there were two schools within the district working on the alternating scheduling. Class schedules could then be alternated so that books would be used yearly by transferring them from one school to another.

The second problem created an undesireably high teacher-pupil ratio in one area of study. This occurred in the year in which a required subject, e. g., American History, was taught as compared to the alternating year in which an elective subject, e. g., American Problems, was offered. This problem was due to the fact that one teacher taught all of the social studies courses in the school.

SUMMARY AND CONCLUSIONS

The purpose of this study was to determine if by alternating certain classes biennially the number of different teaching preparations could be reduced thus decreasing the teachers' load. The study also attempted to ascertain the effect this type of scheduling had upon the attitudes of teachers and students toward these classes. A further attempt was made to determine if mixing students from two grade levels resulted in the younger student being penalized with respect to his cumulative grade point average.

The significant conclusions that can be drawn from the results follow:

1. Teachers, generally, thought well of the project and desired to participate in it. Although some teachers expressed reservations about the project there were none that could not be removed by correcting the problems expressed. At the conclusion of the study most were in favor of continuing the project.

2. By alternating classes biennially which were normally taught annually the class preparation load for teachers participating in the project was reduced and this basic quest of the project was, in fact, met.

3. Students were not aroused unduly by the experimental nature of the project but sensed the need for long-range planning and increased

guidance in setting up their schedules. They did not object to being combined with other grade levels in the project classes. Contrary to administrative expectations, however, the younger students did tend to receive lower marks in the project classes.

4. Achievement progress as measured by the use of standardized tests revealed no significant difference between students in the experimental school and those students in the control school.

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APPENDIX

PROPOSED CLASS SCHEDULING

1962-63 School Year	
4 classes of senior English	no classes of junior English
2 classes of Plane Geometry	no classes of Algebra II
3 classes of American Problems	no classes of American History
2 classes of Agriculture II	no classes of Agriculture I
1963-64 School Year	
4 classes of junior English	no classes of senior English
2 classes of Algebra II	no classes of Plane Geometry
4 classes of American History	no classes of American Problems
2 classes of Agriculture I	no classes of Agriculture II
2 classes of Geology	
1 class of Botany and Zoology	no classes of Biology
1 class of Physiology	
2 closses of Chemistry	no classes of Physics
2 classes of Industrial Arts II	no classes of Industrial Arts I
1964-65 School Year	
same as 1962-63 year plus	
4 classes of Biology	
1 class of Physics	
2 classes of Industrial Arts I	