

A STUDY OF THE IMPACT OF TIME LAPSE ON LANGUAGE RETENTION  
IN BEGINNING LEVEL SPANISH CLASSES

by

Kathryn S. Niedfeldt

A Research Paper

Submitted in Partial Fulfillment of the  
Requirements for the  
Master of Science Degree  
With a Major in

Education

Approved: 2 Semester Credits

---

Investigation Advisor

The Graduate School  
University of Wisconsin-Stout  
August, 2001

**The Graduate School  
University of Wisconsin-Stout  
Menomonie, WI 54751**

**ABSTRACT**

Niedfeldt, Kathryn S.

**A study of the impact of time lapse on language retention in beginning level Spanish classes**

M.S. Education      Mary Hopkins-Best, Research Advisor      August 2001      36 pages

American Psychological Association (APA) Publication Manual

A pre-test was given to all Spanish 2 students at Menomonie High School during the 1999-2000 school year to determine if there was a relationship between retention of basic Spanish language skills and information learned in a Spanish 1 course and the time lapse between the Spanish 1 and Spanish 2 courses. After a review of the Spanish 1 curriculum at Menomonie High School a 50 point true/false and multiple choice pre-test was developed by the researcher to cover basic skills and information that students should have acquired in the Spanish 1 course. At the same time as the assessment was given, students were also asked to rate their level of anxiety at the beginning of the Spanish 2 course.

Students' final percentage grades from their Spanish 1 course were used as the baseline data for this study. The grades were obtained from the teachers of the Spanish 1 classes and recorded by the researcher. The scores from the Spanish 2 pre-test were converted into percentages and compared with the baseline data to find out if there was a

retention loss and if the retention loss was greater for students with a longer time lapse. All students' final grades in the Spanish 2 class were also recorded to determine if there was a significant difference for students with a longer time lapse.

The findings of this study indicate that there is a significant difference in the retention of basic skills and information among the four groups under study based on the time lapse between instruction (Group 1, 0 months; Group 2, 3 months; Group 3, 8 months; Group 4, 12 months). There was no significant difference among the four groups in their final Spanish 2 grades. Students with a longer time lapse between levels of instruction showed higher levels of anxiety than students with little or no time lapse. The results of this study can be used by teachers and administrators to determine alternative learning methods and environments for students who are affected by a long time lapse in their foreign language education. Based on the results of this study, teachers and administrators may also want to consider alternative scheduling to accommodate foreign language learning.

### **Acknowledgements**

I would like to thank Mary Hopkins-Best for her time, understanding, and advice on the preparation of this paper. I would also like to thank my family and friends for their constant support and encouragement to ensure the completion of my Master's Degree.

## Table of Contents

<b>Abstract</b>	.....	<b>ii</b>
<b>Acknowledgements</b>	.....	<b>iv</b>
<b>Chapter One:</b>	<b>Introduction</b> .....	<b>1</b>
	Statement of the Problem .....	4
	Research Questions .....	5
	Definition of Terms .....	5
	Assumptions .....	6
	Limitations .....	6
<b>Chapter Two:</b>	<b>Literature Review</b> .....	<b>7</b>
	Advantages of Block Schedules .....	7
	Disadvantages of Block Schedules .....	9
	Knowledge Retention and Learning .....	10
	Foreign Language and the Block Schedule.....	12
<b>Chapter Three:</b>	<b>Methodology</b> .....	<b>14</b>
	Description of Subjects .....	14
	Sample Selection .....	14
	Instrumentation .....	15
	Data Collection .....	15
	Data Analysis .....	17
	Limitations .....	17
<b>Chapter Four:</b>	<b>Results</b> .....	<b>18</b>
	Demographic Information .....	18
	Research Question 1 .....	18
	Research Question 2 .....	20
	Research Question 3 .....	21
<b>Chapter Five:</b>	<b>Discussion</b> .....	<b>23</b>
	Conclusions .....	26
	Recommendations .....	27
<b>References</b>	.....	<b>28</b>
<b>Appendices</b>	Appendix A: Spanish 2 pre-test .....	30
	Appendix B: Agreement to Participate as Research Subject.....	36

## CHAPTER ONE

### *Introduction*

Beginning in the early 1990s a number of schools across the country have been restructuring their daily schedules to increase the length of class periods in minutes and reduce the number of class periods in the school day. One of the most popular models that has been developed to accommodate this restructuring is the block schedule of four class periods per day of approximately 90 minutes each for two terms (4x4 block schedule). Many students, teachers, administrators, and parents favor this new schedule over a more traditional schedule which has students changing classes after 45-50 minutes of instruction in six or seven classes per day that last the entire school year.

Despite its popularity, one of the most important concerns that has arisen with this type of block schedule is knowledge retention when courses are taken for a semester followed by a time lapse of one or more semesters before students continue in an advanced course in the same subject. This issue is especially significant in the study of foreign languages, where maintenance of basic skills and information is vital to success in studying more advanced levels of the language. This study examined the effect of the time lapse between enrollment in Spanish 1 and 2 experienced by many students in a 4x4 block schedule. Students' retention of basic skills and information learned in a beginning level Spanish course was assessed.

Time and its impact on learning have long been of interest to educators. For over 70 years, credit for courses taken at the high school level has been dispersed in Carnegie units, a system that equates learning with time in class (Carroll, 1990). Secondary school requirements were universally based on this measurement with class periods of

approximately 45-50 minutes for 180 school days (National Education Commission on Time and Learning, 1994). Although the Carnegie unit remains the system for awarding credit for high school courses, changes are emerging in the organization of the school schedule in an attempt to create a more effective and efficient utilization of the time available for learning (Fallon, 1995).

As early as the late 1950s and early 1960s, changes in school schedules and the way schools were organized were being encouraged by groups such as the National Education Association and by Education Facilities Laboratories. Numerous reports since then have recommended that the utilization of time in school schedules be restructured. The National Education Association (NEA) (1994) criticized the traditional school schedule as so rigid that it was the constant on which we could depend in today's public high school instead of learning. The NEA argued that the utilization of time in a school schedule be flexible to best meet the learning needs of students. Even though the relationship between time for learning and achievement was found over 60 years ago, the structure of the utilization of time in public schools has been virtually unchanged until recently.

One of the most rapidly growing trends for restructuring the utilization of time is the implementation of the block schedule. Sommerfield (1996) called it the "hot topic" in school reform, as it replaces the traditional schedule of six or seven, 45-50 minute classes per day with fewer classes that last longer. The block schedule follows two basic approaches: (1) holding fewer classes per day that meet every other day for a full year (A/B day schedule) or (2) scheduling fewer classes per term and more terms per year.

The second approach most commonly involves four blocks of time (class periods) per day for two terms (one semester) (Kadel, 1994).

With the opening of the 1996-97 school year, more than 40% of the high schools nationwide were doing some form of a block schedule, considered to be one of the most successful restructuring initiatives in America today (Lammel, 1996). According to Lammel (1996), educators realized that the traditional schedule was ineffective in meeting the academic needs of students. The alternative was to restructure the utilization of time in the school's schedule to better accommodate teachers and students in an effort to create a more positive academic environment, improve student and teacher behavior, and ultimately affect student achievement (Lammel, 1996).

The question now being asked by educators is whether or not a block schedule actually affects student achievement. A key issue of the 4x4 block schedule or four 90 minute class periods per day for two terms is its effect on students' knowledge retention since a year or more may elapse between courses of the same subject, thus interrupting the traditional sequence of courses (Carroll, 1990). Many critics believe that the essential curriculum can not be covered in a block schedule and that students will forget too much if they are out of a subject for more than a three month summer vacation (Carroll, 1994). This concern is especially relevant for students' retention of foreign language skills and information (Canady & Rettig, 1995; Wisconsin Association of Foreign Language Teachers, 1995).

Because of the sequential nature of the skill and information development associated with foreign languages, educators and parents have questioned the effect on foreign language achievement of a time lapse longer than the traditional summer



vacation. Musser (1983) noted that knowledge retention is important because the improvement of foreign language skills and knowledge is dependent upon the learner's retention of previously learned skills and knowledge. This study evolved from the lack of statistical evidence in the literature that showed the effect of block scheduling on knowledge retention in general and specifically on retention of skills and information acquired in the study of foreign languages.

### **Statement of the Problem**

The purpose of this study is to compare the retention of basic Spanish language skills and information learned in a Spanish 1 course to the time lapse between the Spanish 1 and Spanish 2 courses. A specific Spanish 2 pre-test was created for the purpose of this study and administered to all beginning Spanish 2 students at the high school in Menomonie, Wisconsin during the 1999-2000 academic school year. Students were divided into four groups according to the elapsed time between their enrollment in Spanish 1 and Spanish 2: Group 1, 0 months; Group 2, 3 months; Group 3, 8 months, Group 4, 12 months. The results of this study can be used by teachers and administrators to determine alternative learning methods and environments for students who may or may not be affected by a time lapse in their foreign language education. Based on the results of this study, teachers and administrators may also want to consider alternative scheduling to accommodate foreign language learning. This study will contribute to the existing body of knowledge regarding the effects of block scheduling on knowledge retention in general and specifically in foreign languages.

## Research Questions

The following three research questions were addressed in this study:

1. Is there a significant difference in retention of basic skills and information among the four groups as measured by the Spanish 2 pre-test administered at the beginning of a Spanish 2 course, and the difference between their Spanish 1 final grade and their score on the Spanish 2 pre-test?
2. Is there a significant difference in the grades received at the end of the Spanish 2 course among the four groups of students?
3. Is there a significant difference in the anxiety level at the beginning of a Spanish 2 course among the four groups of students as indicated by students' self reported anxiety level?

## Definition of Terms

The following terms need to be defined in order to understand their use in this particular study.

Block schedule is a schedule having four periods that are approximately 90 minutes in length, meeting for only one semester (90 days). This is also known as the 4x4 block schedule.

Retention is the capacity to recall, comprehend, or apply previously learned skills and information.

Spanish 2 pre-test is the instrument designed for this study which tests students on skills and information learned in the Spanish 1 course.

Time lapse is the time period between the end of the first exposure to the skills and information and the beginning of the second exposure.

Traditional schedule is a schedule having six or seven periods that are approximately 45-50 minutes in length, meeting for two semesters (180 days).

### **Assumptions**

There are several assumptions made in this study:

1. Students performed to the best of their ability on the Spanish 2 pre-test.
2. Students' grades in their Spanish 1 course were an accurate reflection of the skills and information acquired at that time.
3. There is a measurable loss of knowledge during a time lapse.
4. Inferences can be made from this sample to the population of foreign language students on a block schedule.

### **Limitations**

There are two important limitations inherent in this study:

1. There were two possible teachers of Spanish 1 and Spanish 2 that could account for differences in the grades received for those courses.
2. Retention of skills and information was measured by the difference between the percentage grade received at the end of the Spanish 1 course and the percentage score received on the Spanish 2 pre-test. This employs the use of two different measuring devices.

## CHAPTER TWO

### *Literature Review*

This literature review will focus on several different areas regarding foreign language learning and specifically its relation to being taught in a block schedule. It begins by examining the advantages and disadvantages associated with block schedules and their effect on student achievement. A brief discussion follows regarding knowledge retention in foreign language learning. Finally, a review of the effects of the block schedule on foreign language achievement is included.

#### **Advantages of Block Schedules**

Advocates of block scheduling list many advantages of this structure for the utilization of time in the public school setting. An important factor of block schedules is their effect on classroom instruction. Block schedules are making us rethink how and what we teach, which forces schools to provide more in-depth learning instead of surface learning (Kramer, 1997). Kadel (1994) supported this claim and indicated that block schedules encourage the use of more effective instructional practices during the longer class period, thus resulting in more learning and higher achievement.

One advantage of the 4x4 block schedule for teachers is the reduced number of students for whom the teacher is responsible per term (Kadel, 1994). The decreased load of students makes it easier for teachers to individualize instruction and do more “one-on-one” instruction, which results in a better rapport between teacher and student (Willis, 1993). Another advantage of a 4x4 block schedule is that teachers can prepare for just

three classes a semester, rather than the typical five to seven (Kadel, 1994). Also, just as the length of a class period on a 4x4 block schedule is approximately 90 minutes, so is the planning time for teachers.

In addition to the benefits a block schedule offers teachers, it also provides benefits to the students. Block scheduled classes allow students to concentrate on fewer subjects and to study a subject in depth without interruption (Willis, 1993). Having fewer subjects per term gives students fewer classes for which to prepare each day and enables them to take more classes each year (Kadel, 1994). Another benefit is that students can move ahead more quickly and can take more courses of a particular subject in a school year (Kramer, 1997).

Direct teacher and student benefits of a block schedule are only some of the advantages of this system of time restructuring. Advocates of the block schedule also note an improvement in the school climate. Coinciding with this improvement is a decrease in the number of student discipline problems. Students spend less time in hallways, an area of a school where discipline problems frequently begin (Kramer, 1997). Carroll (1994) attributed the better student behavior to improved interpersonal relationships made possible by longer class periods and less stress on students who have fewer classes per day. An increase in attendance by students and teachers is also noted by some schools on a block schedule and generally, schools using a block schedule report lower dropout rates (Kramer, 1997).

Additional benefits specifically regarding foreign language education have also been observed. In some cases there appears to be an increase in language enrollment because of greater flexibility in scheduling electives and in some schools, block

scheduling has been used to promote interdisciplinary learning that has benefited foreign languages (McMilan, 1995). There may also be more opportunities to offer and take advanced language classes and students have more time and energy to internalize the language (North Carolina Department of Public Instruction, 1996).

All of these advantages are important to consider while exploring the restructuring of time in schools. However, while secondary school principals name improved student performance as the main goal of restructuring, the literature is contradictory as to the effect of block schedules on student achievement. So far, there is only a small body of research on whether a block schedule helps students learn more (Sommerfield, 1996).

### **Disadvantages of Block Schedules**

In spite of the many advantages of block schedules, there are also a number of disadvantages identified by educators and parents. The North Carolina Department of Education (1996) noted the following disadvantages of a block schedule: less total class time and therefore less time to cover material, longer time needed to prepare for classes, difficulties in placing transfer students, difficulties in making up work due to absences, problematic scheduling of AP courses, more classes/levels to plan for over the course of the year, more extensive homework assignments for students, student difficulties in paying attention during the longer class periods, and student difficulties in keeping up with the faster pace that is inherent to block scheduling.

The Texas Education Agency (1999) reported a number of additional concerns related to block schedules. Students recognized a lack of adequate counseling regarding

the scheduling of courses and observed a number of ill-prepared substitute teachers who were uncertain of how to handle a 90-minute class period. Educators also noted that curriculum and course textbooks in many subjects are not designed for 90-minute classes. They also noticed a need for more supplies and equipment and were concerned with the short time between semesters which makes the transition difficult.

In addition to many of the perceived disadvantages mentioned above, one of the specific concerns regarding student achievement in a block schedule focuses on knowledge retention in skill/concept-based classes such as mathematics and foreign language in situations where students have more than a three month lapse between enrollment in block schedule courses.

### **Knowledge Retention and Learning**

Researchers studying knowledge retention have identified two primary predictors of retention: (1) how well the original learning occurred and (2) the type of learning, that is recall compared to comprehension or application of knowledge. The first predictor, how well the original learning occurred, is supported by several research studies. The improvement in skills and knowledge is dependent upon the learner's retention of the previously learned skills and knowledge (Musser, 1983). Musser (1983) also reported that a "task is easy or hard and material is comprehensible or not to the extent that it maps out pre-existing knowledge" (p. 96). Bahrick's research (1984) also showed higher levels of knowledge retention for students who achieved higher grades and who took more classes. Thus, Bahrick also concluded that knowledge retention can be predicted by the initial depth of learning. However, Bahrick (1979) stated that much of what is learned

during a first exposure is forgotten during the interval between exposures and must be relearned later.

The second predictor of knowledge retention is the type of learning, that is, recall compared to comprehension or application of knowledge. In a study of high school Spanish students, Bahrick (1984) reported that recognition tests showed a higher level of retention than recall tests. Semb, Ellis, & Araujo (1993) conducted a study with college students to determine the amount of information students remembered at four and eleven months after completing a course. The results showed that after four months, students retained 85% of what they had learned, and after eleven months, 80% of what was learned. Semb, Ellis, & Araujo (1993) also noted that retention over time was greatly affected by the degree of original learning and that the retention of recall facts is significantly lower than for recognition, comprehension, and application of knowledge.

A study of the effect of a block schedule on knowledge retention over time was conducted after one year of implementation of the Copernican Plan in the Masconomet Regional High School. In the second year of the implementation of the Copernican Plan, in September, December, and March, comparisons were made of the retention of material studied during the first year. These comparisons, referred to as “gap tests” were administered from three to fifteen months after the courses ended. No significant difference was found that favored students in the Copernican Plan over students in the traditional schedule. Both groups had comparable levels of retention (Carroll, 1994).

The adoption of a 4x4 block schedule raises reasonable questions about students’ retention of what they have learned since a year or more may elapse between courses in the same subject (Canady & Rettig, 1996). Some educators and parents believe that



students will forget too much if they are out of class for more than a three month summer vacation (Carroll, 1994). While there is little research regarding specific foreign language learning and retention, many foreign language educators are concerned that unless students avoid long interruptions in language learning, language loss will prevent students from reaching the necessary goals for functioning effectively at the next level of instruction (North Carolina Department of Public Instruction, 1996).

### **Foreign Languages and the Block Schedule**

There are several areas of concern which specifically effect block scheduling and foreign language education. The North Carolina Department of Public Instruction (1996) reported three major topics of concern: sequencing for foreign language courses, availability of courses, and development of language proficiency. When planning a schedule, educators need to ensure that courses are offered sequentially so that students have the option to continue their study of a language without long time lapses. A school schedule must also avoid conflict for students in advanced levels of language study with other advanced level courses. Many foreign language teachers also believe that language development occurs during a long, uninterrupted sequence of language study. It is important for students and parents to realize that extended interruptions will impact their level of language proficiency.

Several foreign language teachers who were currently teaching in the block system reported that first and second year language courses need to be taken back-to-back for students to be successful (Wisconsin Association of Foreign Language Teachers, 1995). McMillan (1995) also recognized the significance of long intervals between

sequential scheduling. She noted that students are often allowed to take Level 1 in the fall, nothing in the spring, and then Level 2 the following fall or spring, when almost all instruction and learning has been lost to time. In addition students don't seem to have the reflective time or down time to internalize so much material (McMillan, 1995).

Teachers generally agree that less of the curriculum is taught in the block schedule, but that what is taught is learned with a greater depth of understanding. However, in a foreign language course, which requires continuous practice to maintain and increase a skill level, there are serious questions about the effect of block scheduling on student learning. Depth of understanding in beginning level language classes may not be a viable trade-off for providing a wide variety of situations in which to use the language at an introductory level (Wisconsin Association of Foreign Language Teachers, 1995).

The difference in language proficiency between students who have a lapse in language courses and those who have just completed the course is most widely observed with students at the beginning levels of language learning. Students in more advanced levels register an initial disadvantage which quickly disappears (North Carolina Department of Public Instruction, 1996). The Wisconsin Association of Foreign Language Teachers (1995) agreed and stated that there is a significant loss of language ability for beginning and intermediate level students if they do not take a language class every semester. However, advanced level language students do not seem to be affected as dramatically by block scheduling, most likely because they already have a significant amount of language firmly imprinted in their minds.

## CHAPTER THREE

### *Methodology*

This chapter will describe the subjects being studied and how they were chosen to participate in the study. The instrumentation used to collect the data will also be discussed. Procedures used for data collection and analysis will be given, followed by a discussion of the limitations inherent in the methodology of this study.

#### **Description of Subjects**

The subjects for this study were students enrolled in a Spanish 2 course at Menomonie High School in Menomonie, Wisconsin during the 1999-2000 academic school year. There were 90 subjects participating in the study representing all four grade levels (9-12). Two sections of classes totaling 33 students were pre-tested in the fall semester and three sections of classes totaling 57 students were pre-tested in the spring semester. The students were divided into four groups according to the amount of time between their enrollment in Spanish 1 and Spanish 2. The four different groups under study were: 0 months (20 students), 3 months (17 students), 8 months (31 students), and 12 months (22 students).

#### **Sample Selection**

Participants for this study were chosen because they were enrolled in a Spanish 2 course and had previously taken Spanish 1 at Menomonie High School. Students who had taken Spanish 1 at another school and recently transferred to Menomonie were not

included in the study. Students who were repeating Spanish 2 or had dropped Spanish 2 before finishing the course were not included in the study either. There were 3 students who were absent on the day the Spanish 2 pre-test was given, so their data was not available.

### **Instrumentation**

A 50 point true/false and multiple choice pre-test was developed by the researcher for the purpose of this study. After a review of the Spanish 1 curriculum at Menomonie High School, the Spanish 2 pre-test was created to cover basic skills and information that students should have acquired in their Spanish 1 course taken previously at Menomonie High School. The test was reviewed and edited by several Spanish teachers and students to minimize errors or ambiguity in any of the questions. Since this instrument was developed specifically for this study, there is no prior data to measure its validity or reliability. Aside from the test questions themselves, the instrument contains various demographic questions, as well as a scale in which students were instructed to rate their level of anxiety at the beginning of the Spanish 2 course. A copy of the instrument is included in Appendix A.

### **Data Collection**

Menomonie High School was chosen as the school for this study for several reasons. It had been on a block schedule for four years, therefore students and teachers were accustomed to instruction and assessment in a block schedule. Foreign language teachers as well as parents in the district have expressed concern about the effects of the

block schedule on foreign language education and are currently exploring other scheduling options for students. Also, the researcher had access to the Spanish curriculum at the high school in order to create the Spanish 2 pre-test to be used in the study. Permission to conduct this study was granted by the K-12 Foreign Language Department Chairperson of the School District of the Menomonee Area and all students agreed to participate in the study as per the Agreement to Participate as a Research Subject included in Appendix B.

Students' percentage grades from their Spanish 1 course were used as the baseline data for this study. The grades were obtained from the teachers of the Spanish 1 classes and recorded by the researcher. On the second day of the Spanish 2 class, the Spanish 2 pre-test was administered to students. The second day was chosen so that the Spanish 2 teachers could have one day with the students for beginning of the term activities, as well as time for a brief review of the very basic information learned in the Spanish 1 course. Students were instructed to do their best on the Spanish 2 pre-test. The scores from the Spanish 2 pre-test were converted into percentages and compared with the baseline data to find out if there was a retention loss and to compare the loss among the four groups of students. Group 1 had no time lapse between Spanish 1 and Spanish 2; Group 2 had a three month time lapse; Group 3 had an eight month time lapse; Group 4 had a twelve month time lapse. Finally, students' grades were recorded at the end of the Spanish 2 course, again in percentage form, and compared with both previous sets of data to determine if there was a measurable difference among the four groups of students at the end of the Spanish 2 course.

## **Data Analysis**

Descriptive statistics were calculated and reported for characteristics of the students participating in the study, including their levels of anxiety about the class. Percentages and means were also used to calculate the baseline data, Spanish 2 pre-test scores, and final Spanish 2 percentage scores of each group of students in the study.

A formal statistical analysis (one-way analysis of variance test) was performed to compare the retention differences among the four groups of students based on their time lapse and the students' level of anxiety among the four groups. The baseline data, Spanish 2 pre-test scores, and final Spanish 2 percentage scores were also used in this portion of the analysis.

## **Limitations**

There are two limitations to the methodology of this study:

1. Three different measuring devices were used to evaluate students' acquisition of skills and information. The baseline data used percentage scores from the students' Spanish 1 course, which were given by two different teachers. The second set of scores was obtained from the Spanish 2 pre-test, and the third set of scores was reported from the final percentage grades received in the Spanish 2 course which were given by two different teachers as well.
2. The results of this study may not be generalizable to students in other school districts because the study only examined data from one high school.

## CHAPTER FOUR

### *Results*

This chapter will present the results of the study done to compare the retention of basic Spanish language skills and information learned in a Spanish 1 course to the time lapse between the Spanish 1 and Spanish 2 courses. The demographic information will be reported first. Data collected to respond to each of the research questions will then be given.

#### **Demographic Information**

The sample for this study consisted of 90 students: 24 freshmen, 55 sophomores, 9 juniors, and 2 seniors. There were 41 males who participated in the study and 49 females. Students were divided into four groups according to the elapsed time between their enrollment in Spanish 1 and Spanish 2: Group 1, 0 months; Group 2, 3 months; Group 3, 8 months; Group 4, 12 months. Students of varying academic ability were distributed evenly throughout the four groups as evidenced by their overall grade point averages.

#### **Research question 1**

Is there a significant difference in retention of basic skills and information among the four groups as measured by the Spanish 2 pre-test administered at the beginning of a Spanish 2 course, and the difference between their Spanish 1 final grade and their score on the Spanish 2 pre-test?

A one-way analysis of variance test of the Spanish 2 pre-test scores for the four groups revealed that there was a significant difference among all four groups. With a df of 3 and an F-value of 12.742, the significance was determined at the .01 level. Group 1, which had no time lapse in instruction from the Spanish 1 course to the Spanish 2 course had the highest mean score of 67.70%. Group 2, which had a time lapse of 3 months, had a mean score of 59.06%. Group 3, which had a time lapse of 8 months, had a mean score of 55.68%. And finally Group 4, which had the greatest time lapse of 12 months, had the lowest mean score of 48.82%. The Group 4 students had a mean score nearly 19 percentage points below the Group 1 mean, putting those students in Group 4 at a major disadvantage compared to the Group 1 students. Table 1 presents the results of the Spanish 2 pre-test for each of the four groups.

**Table 1: Spanish 2 pre-test results**

Group - Time lapse	N	Mean	Std. Deviation	Std. Error
Group 1 - 0 months	20	67.70	8.09	1.81
Group 2 - 3 months	17	59.06	10.18	2.47
Group 3 - 8 months	31	55.68	12.20	2.19
Group 4 - 12 months	22	48.82	8.06	1.72
Total	90	57.31	11.90	1.25

Additionally, an analysis of variance was performed on the difference between the Spanish 2 pre-test percentage scores and the final percentage grade students had received in the Spanish 1 course. This was noted as a loss of language retention for each student. Similar to the finding of the Spanish 2 pre-test results, a one-way analysis of variance test revealed a statistically significant difference at the .01 level among the four groups with a df of 3 and an F-value of 14.344. Group 1, which had no time lapse in instruction from



the Spanish 1 course to the Spanish 2 course had the lowest mean loss of -20.35 percentage points. Group 2, which had a time lapse of 3 months, had a mean loss of -30.12 percentage points. Group 3, which had a time lapse of 8 months, had a mean loss of -33.23 percentage points. And finally Group 4, which had the greatest time lapse of 12 months, had the highest mean loss of -38.64 percentage points. This increase in loss of retention for each group indicates a negative impact for students who have an increasingly long time lapse between their exposures to the language. Table 2 presents the loss of retention percentage point means for each of the four groups.

**Table 2: Loss of retention – the difference between the result of the Spanish 2 pre-test and the Spanish 1 final grade**

Group - Time lapse	N	Mean	Std. Deviation	Std. Error
Group 1 - 0 months	20	-20.35	6.69	1.50
Group 2 - 3 months	17	-30.12	7.89	1.91
Group 3 - 8 months	31	-33.23	10.52	1.89
Group 4 - 12 months	22	-38.64	10.39	2.21
Total	90	-31.10	11.19	1.18

## Research question 2

Is there a significant difference in the grades received at the end of the Spanish 2 course among the four groups of students?

While a one-way analysis of variance resulted in no statistically significant difference in the final Spanish 2 grades among the four groups, it is interesting to note the mean grades for each group. Group 1, which had no time lapse in instruction from the Spanish 1 course to the Spanish 2 course had a final Spanish 2 mean percentage grade of 85.65%. Group 2, which had a time lapse of 3 months, had a mean grade of 85.94%. Group 3, which had a time lapse of 8 months, had a mean score of 85.87%. And finally

Group 4, which had the greatest time lapse of 12 months, had the lowest mean grade of 83.09%. The final Spanish 2 grades of students in Groups 1, 2 and 3 all seem to be relatively equivalent. However, in noting the mean final Spanish 2 grade for Group 4, students with a 12 month time lapse had mean grades of more than 2.5% less than each of the other three groups. This seems to indicate that the Group 4 students are still at a slight disadvantage at the end of the Spanish 2 course when compared to the other three groups. Perhaps with a larger sampling, this too would become statistically significant.

### **Research question 3**

Is there a significant difference in the anxiety level at the beginning of a Spanish 2 course among the four groups of students as indicated by students' self reported anxiety level?

Students were asked to rate their anxiety level at the beginning of their Spanish 2 course on a scale of 1-5, where a 1 meant that they were not at all concerned about being successful in the class and a 5 meant that they were very concerned and were feeling a great deal of stress about their potential for success in the class. The mean anxiety levels for each of the four groups were noteworthy. Group 1, which had no time lapse in instruction from the Spanish 1 course to the Spanish 2 course had a mean anxiety level of 2.45. Group 2, which had a time lapse of 3 months, had a mean anxiety level of 3.00. Group 3, which had a time lapse of 8 months, had a mean anxiety level of 3.00. And finally Group 4, which had the greatest time lapse of 12 months, had the highest mean anxiety level of 3.23. While a one-way analysis of variance test did not show these differences to be statistically significant, with a df of 3 and an F-value of 2.672, the result

was very close to a .05 level of significance. Again, perhaps with a larger sampling of students, the results would show a statistical significance. However, from the data currently available, it can be surmised that the longer time lapse students have between their exposures to the language, the more stressful their second experience becomes.

Table 3 presents the anxiety level at the beginning of the Spanish 2 course for each of the four groups.

**Table 3: Anxiety level at the beginning of the Spanish 2 course**

Group - Time lapse	N	Mean	Std. Deviation	Std. Error
Group 1 - 0 months	20	2.45	.76	.17
Group 2 - 3 months	17	3.00	1.00	.24
Group 3 - 8 months	31	3.00	.82	.15
Group 4 - 12 months	22	3.23	1.11	.24
Total	90	2.93	.95	9.97E-02

## CHAPTER FIVE

### *Discussion, Conclusions, and Recommendations*

As the block schedule maintains its popularity into the 21<sup>st</sup> century, educators must continually evaluate the effectiveness of such a schedule and be willing to make any necessary changes in order to accommodate student achievement. There are many advantages to the block schedule for teachers and students alike as well as an improvement in school climate. However, because the 4x4 block schedule often requires students to “skip” one or more semesters between subsequent courses within a subject, critics of the 4x4 block schedule question the effect of the longer periods of time on knowledge retention, especially in foreign language.

This study compared the effect of varying time lapses between instruction of beginning level Spanish classes on retention of basic language skills and information. This chapter will include a discussion on the results of this study and conclusions that can be drawn from it. It will close with some recommendations for educators based on the findings of this study and suggestions for further research opportunities.

### **Discussion**

Research question 1 - Is there a significant difference in retention of basic skills and information among the four groups as measured by the Spanish 2 pre-test administered at the beginning of a Spanish 2 course, and the difference between their Spanish 1 final grade and their score on the Spanish 2 pre-test?

The Spanish 2 pre-test, which was created for the purpose of this study, yielded student scores ranging from 32 to 90 and the mean score of all students taking the test was 57.31. This overall low performance may suggest that the test itself was overly difficult for students. However, the results still quite evidently showed that there is a negative impact on the language retention of students with a longer time lapse. The mean scores for the four groups of students ranged from a high of 67.70 for students with no time lapse to a low of 48.82 for students with a 12 month time lapse.

A statistically significant difference in scores among the four groups confirmed the researcher's original belief that the longer the time lapse was, the more detrimental that time would be to a student's retention of basic skills and information. This result also concurs with the research findings of the North Carolina Department of Public Instruction (1996) and the Wisconsin Association of Foreign Language Teachers (1995) which indicate that there is a significant loss of language ability for beginning level students if they do not take a language class every semester as discussed in Chapter Two.

The researcher hopes that the results of this study and others will encourage educators to create schedules for students that will eliminate the long time lapses in their foreign language education. Of particular interest to schools on the 4x4 block schedule is the option of requiring students to take the first two levels of a foreign language in back-to-back semesters, thus allowing students to complete their first two levels in one academic school year. This option is encouraged by Canady & Rettig (1996) as well as the North Carolina Department of Public Instruction (1996) and also seems to be received

favorably by foreign language educators as noted by anecdotal conversations with colleagues of the researcher.

Research question 2 - Is there a significant difference in the grades received at the end of the Spanish 2 course among the four groups of students?

There was no statistically significant difference in grades received at the end of the Spanish 2 course; however, this may be due to the accommodations provided by the instructors. The Spanish 2 curriculum at Menomonie High School includes an extensive three week review at the beginning of the course that was created to allow students with large time lapses since their previous course to “catch up” to those students with little or no time lapse. If all students were at a similar retention level, it is the researcher’s belief that far less time would be needed for review, thus opening up additional time and opportunities for extended study of the language.

Research question 3 - Is there a significant difference in the anxiety level at the beginning of a Spanish 2 course among the four groups of students as indicated by students’ self reported anxiety level?

The researcher was unable to locate any prior research on students’ feelings and attitudes when entering a foreign language class after having had a long time lapse from their previous course. While perhaps not as significant as student achievement, the researcher believes that students’ anxiety levels play an important role in their thought processes and therefore impact their learning and potential success in education.

When students were asked to rate their anxiety level on a scale of 1-5, the mean level increased from 2.45 with students who had no time lapse, up to 3.23 with students who had a 12 month time lapse. While not statistically significant given the sample used

in this study, the researcher believes that a larger sample size or an additional study would result in statistically significant differences.

In addition to the mean scores reported for the different groups in this study, the researcher, who is a Spanish teacher, had access to anecdotal evidence from conversations with her students and their reactions to various tasks and activities in the classroom. It is the researcher's opinion that students with longer time lapses between exposure to the language had a much more difficult time acquiring the same amount of knowledge as their classmates who had little or no time lapse. By the end of the Spanish 2 course the researcher observed little difference among the four groups, however the initial stress and frustration experienced by many students could be avoided if there were no long time lapses in their educational experiences.

## **Conclusions**

The findings of this study indicate that there is a significant difference in the retention of basic skills and information for students based on the time lapse between exposures to the foreign language. Students with a 12 month time lapse performed nearly 19 percentage points lower on the Spanish 2 pre-test than did students with no time lapse in their instruction. However, at the end of the Spanish 2 course students in all four groups seemed to be back at nearly the same level of knowledge. While not statistically significant, anxiety levels for students did increase along with the amount of time lapse between their language learning.

## **Recommendations**

Teachers and administrators at schools currently using a 4x4 block schedule may want to consider the implications of this study on foreign language learning and possibly develop alternative scheduling options to better accommodate foreign language students and eliminate such long time lapses between Spanish 1 and Spanish 2 courses. If such options are unavailable, teachers and administrators could also determine alternative learning methods and environments for those students who are affected both academically and psychologically by a long time lapse in their foreign language education.

Replicating this study using a larger sample of students could enhance the credibility of these findings. Using the Spanish 2 pre-test as the measuring device both at the end of the Spanish 1 course and the beginning of the Spanish 2 course could also increase the reliability of the results found in this study.

A researcher in a school system in the process of changing to a 4x4 block schedule could do a comparison study of language retention of students in a school using a traditional schedule of year long courses versus a school using a 4x4 block schedule.

An evaluation of the amount of time needed for review in the Spanish 2 course would also be an interesting research option. There likely would be different needs for students with varying time lapses in their foreign language education.

Further research is also needed to determine the effects of a 4x4 block schedule on the knowledge retention of students in upper level language classes, as this study dealt only with students in the first two levels of language learning.



## REFERENCES

Bahrick, H.P. (1979). Maintenance of knowledge: Questions about memory we forgot to ask. Journal of Experimental Psychology: General, 108(3), 296-308.

Bahrick, H.P. (1984). Semantic memory content in permastore: Fifty years of memory for Spanish learned in school. Journal of Experimental Psychology: General, 113, 1-29.

Canady, R.L., & Rettig, M.D. (1995). Block scheduling: A catalyst for change in high schools. New Jersey: Eye on Education, Inc.

Carroll, J.M. (1990). The Copernican plan: Restructuring the American high school. Phi Delta Kappan, 71(5), 358-365.

Carroll, J.M. (1994). The Copernican plan evaluated: The evolution of a revolution. Phi Delta Kappan, 76(2), 105-113.

Fallon, K. (1995, April). Intensive education. Paper presented at the annual meeting of the American Education Research Association, San Francisco. Riverside: University of California, Department of Education.

Kadel, S. (1994). Reengineering high schools for student success. Hot topics: Usable research. Southeastern Regional Vision for Education, 16-23. Greensboro: University of North Carolina, School of Education. (ERIC Document Reproduction Service No. ED 366 076)

Kramer, S.L. (1997). What we know about block scheduling and its effect on math instruction, Part 1. Bulletin: National Association of Secondary School Principals, 18-42.

Lammel, J.A. (1996, January). Block scheduling. National Association of Secondary School Principals: Newsletter, 5.

McMillan, C. (1995). Language education at the state level: An update of activities. Washington, DC: Joint National Committee for Languages, National Council of State Supervisors of Foreign Language. (ERIC Document Reproduction Service NO. ED 392 253)

Musser, P.H. (1983). Handbook of child psychology (4<sup>th</sup> ed.), 111. New York: John Wiley and Sons.

National Education Association (1994). Time strategies. Washington, DC: Author.

National Education Commission on Time and Learning. (1994, April). Prisoners of time: Report of the National Education Commission on time and learning. Washington, DC: U.S. Government Printing Office.

North Carolina Department of Public Instruction. (1996). Foreign languages on the block. Raleigh, North Carolina: Author. (ERIC Document Reproduction Service No. ED 403 742)

Semb, G.A., Ellis, J.A., & Araujo, J. (1993). Long-term memory for knowledge learned in school. Journal of Educational Psychology, 85(2), 305-316.

Sommerfield, M. (1996, May 22). More and more schools putting block scheduling to test of time. Bulletin: National Association of Secondary School Principals, 15(35).

Texas Education Agency Office. (1999, September). Block scheduling in Texas public high schools. Texas Education Agency Office of Policy Planning and Research Report Number 13.

Willis, S. (1993, March). Are longer classes better? ASCD Update, 35(3), 1-3.

Wisconsin Association of Foreign Language Teachers. (1995). Redesigning high school schedules. Madison, WI: A Report of the Task Force on Block Scheduling by the Wisconsin Association of Foreign Language Teachers. (ERIC Document Reproduction Service No. ED 391 391)

**Appendix A****Spanish 2 pre-test**

English name: \_\_\_\_\_

Date: \_\_\_\_\_

Year in school: 9    10    11    12

Final grade received in Spanish 1 class: \_\_\_\_\_

I finished Spanish 1: \_\_\_\_\_ 0 months ago.  
 \_\_\_\_\_ 3 months ago.  
 \_\_\_\_\_ 8 months ago.  
 \_\_\_\_\_ 12 months ago.

I would rate my current anxiety level about this class as:    1    2    3    4    5

(1 would mean that you are not worried at all about your success in the class and 5 would mean that you are very stressed about the class)

Grade on test: \_\_\_\_\_

Final grade received in Spanish 2 class: \_\_\_\_\_

**Section 1 – true/false**

\*\*Write true or false in the blank at the left.

1. \_\_\_\_\_ The indefinite articles in Spanish are *el, la, los* and *las*.
2. \_\_\_\_\_ The word *armario* means *yellow* in English.
3. \_\_\_\_\_ The *yo* form of any verb in Spanish ends in an *o*.
4. \_\_\_\_\_ Most Hispanic students have the same classes every school day.
5. \_\_\_\_\_ The pronoun used to replace *Paco y Ana* is *ellos*.
6. \_\_\_\_\_ There are two types of infinitive verbs in Spanish: *-ar* and *-er* verbs.
7. \_\_\_\_\_ Most Hispanic people keep their mother's and father's last names.
8. \_\_\_\_\_ Honduras is located in South America.

**Section 2 – multiple choice**

\*\*Choose the best answer to complete each statement and write the letter in the blank next to the number.

9. \_\_\_ Yo no \_\_\_\_\_ cantar para la clase.  
a. me gusta  
b. necesita  
c. quiero  
d. gusto
10. \_\_\_ Los profesores siempre son \_\_\_\_\_.  
a. simpático  
b. bailar  
c. aburridos  
d. mucho divertidos
11. \_\_\_ Treinta menos diez y ocho son \_\_\_\_\_.  
a. dos  
b. veinte  
c. cuarenta y ocho  
d. doce
12. \_\_\_ Es posible escribir con \_\_\_\_\_.  
a. un lápiz  
b. una carpeta  
c. el sacapuntas  
d. escritorio
13. \_\_\_ Hay \_\_\_\_\_ en el pupitre.  
a. el libros  
b. muchas reglas  
c. las calculadora  
d. mucho cuadernos
14. \_\_\_ La bandera de los Estados Unidos es \_\_\_\_\_.  
a. rojo, anaranjado y azul  
b. roja, blanca y azul  
c. rojo, blanco y verde  
d. rosada, blanca y azul
15. \_\_\_ Mi \_\_\_\_\_ es la hermana de mi padre.  
a. abuela  
b. madre  
c. tía  
d. sobrina
16. \_\_\_ ¿Me \_\_\_\_\_ ir al baño?  
a. permito  
b. puedo  
c. necesito  
d. permities

\*\*Choose the best answer to each question in Spanish and write the letter in the blank next to the number.

17. \_\_\_\_ ¿Cómo te llamas?
- a. Te llamas Roberto.
  - b. Me llamo es Roberto.
  - c. Yo Roberto.
  - d. Me llamo Roberto.
18. \_\_\_\_ ¿Qué te gusta?
- a. Me gusta bebo.
  - b. Me gusta el baloncesto.
  - c. Te gusta hacer la tarea.
  - d. Me gusto el voleibol.
19. \_\_\_\_ ¿A qué hora es la clase de español?
- a. Es dos y media.
  - b. Es a diez y diez.
  - c. Es a la una.
  - d. Es a las nueve y cuarenta.
20. \_\_\_\_ ¿Cómo eres?
- a. Soy cansado.
  - b. Estoy mal.
  - c. Eres inteligente.
  - d. Soy bajo.
21. \_\_\_\_ ¿De dónde eres?
- a. Estoy en Cuba.
  - b. Soy de Nicaragua.
  - c. Soy Argentina.
  - d. Donde de Perú.
22. \_\_\_\_ ¿Bailáis mucho?
- a. Si nosotros bailamos mucho.
  - b. No, no bailáis mucho.
  - c. Sí bailamos mucho.
  - d. No, no bailo mucho.
23. \_\_\_\_ ¿Qué tiempo hace hoy?
- a. Son las tres y cuarto.
  - b. Es frío.
  - c. Hace mucho calor.
  - d. Hace nublado.
24. \_\_\_\_ ¿Cuántos años tienes?
- a. Tienes quince años.
  - b. Tengo diez y cinco.
  - c. Soy catorce.
  - d. Tengo diez y seis años.

### **Section 3 – reading comprehension**

\*\*Read the following paragraph and answer true or false according to the information.

iHola! Me llamo Javi y soy de México pero ahora vivo en los Estados Unidos. Mi escuela es muy divertida. Tengo cuatro clases ahora: el inglés, las matemáticas, la educación física, y la historia. ¡Pero no tengo el español! Mis profesores son muy simpáticos y siempre van a mis partidos de baloncesto. También juego al fútbol para la escuela y con mis amigos en el verano. Soy cómico, inteligente, divertido e interesante. Me gustan mucho los deportes pero me gustan mis clases también.

25. \_\_\_\_\_ Javi lives in Mexico.
26. \_\_\_\_\_ Javi plays basketball and football.
27. \_\_\_\_\_ Javi doesn't have a Spanish class.
28. \_\_\_\_\_ Javi is a boy.
29. \_\_\_\_\_ Javi's teachers play basketball.
30. \_\_\_\_\_ Javi plays soccer in the winter.
31. \_\_\_\_\_ Javi likes sports.

### **Section 4 – sentence translation**

\*\*Choose the best translation for each sentence and write the letter in the blank next to the number.

32. \_\_\_\_ We go to the mall every day.
- Nosotros ir al centro comercial todos los días.
  - Vamos al centro comercial todos los días.
  - Vamos el centro comercial todos los días.
  - Nosotros el centro comercial todos los días.
33. \_\_\_\_ Today is the first of June.
- Hoy es el uno de junio.
  - Hoy es el primero de Junio.
  - Hoy es primero de junio.
  - Hoy es el primero de junio.
34. \_\_\_\_ They eat a lot of Mexican food.
- Ellos comer mucha comida mexicana.
  - Comen un mucho de comida mexicana.
  - Ellos coman mucho comida de México.
  - Ellos comen mucha comida mexicana.

35. \_\_\_ It's very hot in the summer.  
a. Hace mucho calor en el verano.  
b. Es muy calor en el verano.  
c. Es muy caliente en el invierno.  
d. Es hace mucho calor en el verano.
36. \_\_\_ My cousin likes to talk.  
a. Mi tío gusta hablar.  
b. A mí tío le gusta hablar.  
c. Mi primo le gusta hablar.  
d. A mi primo le gusta hablar.
37. \_\_\_ My friends are smart and pretty.  
a. Mi amigas son inteligentes y bonitas.  
b. Mis amigas es inteligente y bonita.  
c. Mi amiga está inteligente y bonita.  
d. Mis amigas son inteligentes y bonitas.
38. \_\_\_ ¿Vive Fernando al lado del parque?  
a. Fernando lives far from the park.  
b. Live Fernando near the park?  
c. Does Fernando live next to the park?  
d. Does Fernando live on top of the park?
39. \_\_\_ Los chicos sacan la basura todos los martes.  
a. They take out the garbage all the days.  
b. The boys take out the garbage all the Thursdays.  
c. The boys take out the garbage every Tuesday.  
d. The boys take out the garbage on Tuesday.
40. \_\_\_ Uds. quieren discutir en la clase de inglés.  
a. You all want to discuss in English class.  
b. They want to discuss the class of English.  
c. They want to discuss English class.  
d. You want to discuss in the class of English.

### **Section 5 – verb conjugation**

\*\* Choose the best translation for each verb phrase and write the letter in the blank next to the number.

41. \_\_\_ they run  
a. ellos corren  
b. Uds. corren  
c. vosotros corréis  
d. ellas corran

42. \_\_\_ we attend
- vosotros asistís
  - nosotras asistimos
  - nosotros asistamos
  - ellos asisten
43. \_\_\_ he works
- el trabaja
  - Ud. trabaja
  - él trabaja
  - tú trabajas
44. \_\_\_ you look (informal)
- yo miro
  - tú miras
  - tú mires
  - Ud. mira
45. \_\_\_ I listen
- yo escucha
  - yo escuchas
  - yo escucho
  - yo escuchar
46. \_\_\_ you all dance (formal)
- bailan
  - bailamos
  - bailáis
  - baila
47. \_\_\_ she reads
- lea
  - lee
  - lees
  - leen
48. \_\_\_ you write (formal)
- escribo
  - escribes
  - escribe
  - escriba
49. \_\_\_ you all swim (informal)
- nadáis
  - nadan
  - nada
  - nadamos
50. \_\_\_ they go
- vas
  - vamos
  - váis
  - van



## Appendix B

### Agreement to Participate as a Research Subject

Project Title: A comparison of language retention and time lapse between instruction of beginning level Spanish classes

Kathryn Niedfeldt, graduate student at the University of Wisconsin-Stout is conducting a research project to determine if there is a significant relationship between the retention of basic Spanish language skills and information learned in a Spanish 1 course and the time lapse between the Spanish 1 and Spanish 2 courses. We would appreciate your participation in this study as it might determine the need for alternative schedules, methods, or environments to accommodate foreign language learning. We do not anticipate that this study will present any medical or social risk to you. The information we gather will be kept strictly confidential and any reports of the findings will not contain your name or any other identifying information.

Your participation in this project is completely voluntary. While the exam is required by your teacher as part of the Spanish 2 curriculum, if you do not wish your results and information to be included in the body of knowledge used for the purpose of this study, simply tell the researcher. You may choose not to participate without any adverse consequences to you.

Once the study is completed, we would be glad to share the results with you.

NOTE: Questions or concerns about participation in the research or subsequent complaints should be addressed first to the researcher or research advisor and second to Dr. Ted Knous, Chair, UW-Stout Institutional Review Board for the Protection of Human Subjects in Research, 11 HH, UW-Stout, Menomonie, WI, 54751, phone (715)232-1126.