


An Analysis of Eighth Grade Keyboarding Instruction at Pepin Area Schools.

By

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A handwritten signature in cursive script that reads "Howard D. Lee". The signature is written in black ink and is positioned above a horizontal line.

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ABSTRACT

Keyboarding/Typewriting continues to be an important skill that students learn in the elementary grades through high school. No research has been conducted to determine if a keyboarding instructional software program is as effectiveness as the traditional method being used in the eighth grade (eighth grade keyboarding) at Pepin Area Schools. The purpose of this study at Pepin Area Schools was to determine which method of keyboarding instructions was more effective, using the traditional textbook instruction or by using keyboarding software to teach eighth grade keyboarding. The results of the study concluded that the achievement level when using the traditional method of instruction and the achievement level using the keyboarding software was not significant.

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TABLE OF CONTENTS

	Page
.....	Page
ABSTRACT.....	ii
List of Tables.....	v
Chapter I: Introduction.....	1
<i>Statement of the Problem</i>	4
<i>Purpose of the Study</i>	4
<i>Research Questions</i>	5
<i>Significance of Study</i>	5
<i>Limitations of Study</i>	6
<i>Assumptions</i>	6
<i>Definitions of Terms</i>	7
Chapter II: Review of Literature.....	8
Chapter III: Methodology.....	15
<i>Subjects</i>	15
<i>Instrumentation</i>	17
<i>Data Collection</i>	18
<i>Data Analysis</i>	19
<i>Limitations</i>	19
Chapter IV: Findings.....	21
<i>Pre and Post-Test Using Traditional Instruction</i>	22
<i>Pre and Post-Test Using Traditional Instruction</i>	22
<i>8th Grade Keyboarding 2nd Quarter Results Using Typing Time</i>	

<i>Instructional Software</i>	23
<i>The Difference In Achievement When Comparing Both Pre-Test</i>	24
<i>The Difference In Achievement When Comparing Both Post-Test</i>	25
<i>Finger Placement Test</i>	25
<i>Discussion</i>	26
<i>Summary</i>	26
Chapter V: Summary, Conclusions, and Recommendations.....	28
<i>Summary</i>	28
<i>Conclusions</i>	29
<i>Recommendations</i>	31
References.....	33

List of Tables

Table 1: Pre and Post-Test Using Traditional Instruction.....	22
Table 2: Pre and Post-Test Using Traditional Instruction.....	22
Table 3: 8 th Grade Keyboarding 2 nd Quarter Results Using Typing Time Instructional Software.....	23
Table 4: Pre and Post-Test Using Typing Instructional Software.....	24
Table 5: The difference In Achievement When Comparing Both Pre-Tests.....	24
Table 6: The Difference In Achievement when Comparing Both Post-Tests.....	25
Table 7: Finger Placement Test.....	26

Chapter One:

Introduction

Communication is often known as “the central nervous system” of business and industry. Communication starts in the brain, it moves through the fingers to a keyboard that converts thoughts into everything from memos, letters, reports or email (Robinson et al., 1999 p.iii). Bartholome (2002) stated that keyboarding/typing is the manipulation of keys in a standard typewriting keyboard with the emphasis on the typed copy or input. The output is produced on paper at the same time as the input is provided. According to the Century 21 Fifth Edition keyboarding and document processing textbook, basic keyboarding skill consists of the fluent manipulation by “touch”(without looking) of the letter keys, the figure/symbol keys, and the basic service keys (Robinson et al., 1993, p. iii).

Bartholome (2002) studied business educators over a period of over 100 years. Frank McGurrin of Salt Lake City was one of the first to use the touch system. In 1878 McGurrin taught himself to touch type using all fingers. Because of the success of other students using McGurrin’s all-finger touch system, other educators were converted to teaching this method. By the 1900’s, the touch system of teaching typewriting became very popular. By World War I there was a demand for trained typists (Bartholome, 2002).

Keyboarding/Typewriting continues to be an important skill that students learn in the elementary grades through high school (Skifstad, 2003). Over the years, keyboarding instruction has been in a period of transition. Schools have moved from electronic typewriters to personal computers and word processors (Robinson et al., 1993 p. iii).

Middle school keyboarding grades 6-8 goals should be the memorization of the keys. Speed will increase as students progress through grade levels. Students, who have keyboarding instruction for short time periods such as two weeks, should not be graded on speed. Keyboarding should also include basic word processing instruction as well as keyboarding skills (Johnson, 1999).

The Wisconsin Department of Public Instruction (DPI) has created the Wisconsin Model Academic Standards for Business. The model stated that information technology is always changing. Therefore, students must be able to learn current technology and apply it. The 8th grade performance standard stated that students must be able to demonstrate touch keyboarding skills at acceptable speed and accuracy levels (Wisconsin DPI, 2007).

A study by Wisemen (2000) pointed out that software packages designed to teach keyboarding are only helpful to the degree to which a student is individually motivated to learn and evaluate his or her own performance. Active teacher involvement in the instruction is crucial to student success. Wisemen (2000) also stated that if teachers implement effective keyboarding skill training, students will obtain a lifelong advantage.

Some middle school keyboarding programs use the traditional keyboarding/typing text such as the Century 21 Keyboarding, Formatting, and Document Processing text (Johnson, Roach, and Hames, 1999). There are also programs like Middle School Keyboarding for Computer Success 1st Edition which is a software program available from Thomson Learning that can be used to teach keyboarding skills (Robinson et al., 1999).

In the Pepin Area Schools school district, keyboarding is taught at the 7th and 8th grade levels. Pepin Area Schools is located in Pepin, Wisconsin in Pepin County. Pepin borders the Mississippi river in Western Wisconsin and was established in 1846. The town of Pepin takes its name from the Pepin brothers who were French trappers. Laura Ingalls Wilder was also born in the Pepin area (Pepin Area Community Club [PACC],2007).

According to Mr. B. Quinton (personal communication, May 28, 2007), the superintendent at Pepin Area Schools, the 2007-2008 enrollment at Pepin Area Schools was 162 students, K-12. The eighth grade keyboarding 2007-2008 enrollment was 19 students. Eighth grade keyboarding was taught the first semester of the school year between two separate groups each 9-week quarter.

Eighth grade keyboarding is a continuation of the skills developed during seventh grade keyboarding as stated in the eighth grade keyboarding syllabus. This instructional approach is based from a traditional touch-typing method. The first week of class students use the same textbook and review touch-typing skills and objectives they previously learned in seventh grade keyboarding. The following three weeks students continue to use the textbook activities as well as timed writings to improve speed and accuracy. Eighth grade keyboarding students also will write stories and draft proper formatted business letters. The objectives of eighth grade keyboarding is to:

1. Demonstrate a typing speed of 30-35 words per minute,
2. Compose professional and personal documents,
3. Demonstrate proper keyboarding technique, and

4. Demonstrate basic word-processing skills such as spell-check, cut and paste, underline, italics, bold, and line spacing.

As stated in the Business and Information Technology Curriculum Planning guide business and information technology educators must develop strategies and programs that reflect the demands of society (Wisconsin DPI, 2007). There are new keyboarding programs that have been designed to enhance keyboarding. MicroType Pro is one software program designed with animated hand graphics that show the correct reaches. The software reports the typing speed immediately and then sets a new goal adapted to the student's performance. It is used as a supplement to the keyboarding text (Robinson et al., 1999).

The Problem Statement

Pepin Area Schools has been using the same keyboarding instruction methods for many years. There are several keyboarding instructional software programs available. Pepin Area Schools is considering adopting a keyboarding instructional software program. No research has been conducted to determine if a keyboarding instructional software program is as effectiveness as the traditional method being used in the eighth grade (eighth grade keyboarding) at Pepin Area Schools.

The Purpose of the Study

The purpose of this study at Pepin Area Schools was to determine which method of keyboarding instructions was more effective, using the traditional textbook instruction or by using keyboarding software to teach eighth grade keyboarding. The study used traditional textbook instruction to teach eighth grade students keyboarding during the first quarter of the 2007-2008 school year at Pepin Area Schools. The first half of the eighth

grade class was the constant. The second quarter keyboarding students used a combination of text and keyboarding software. Each class was evaluated based on speed and accuracy using a pretest and post-test.

Research Questions

The following research questions were asked:

1. What is the achievement level when using the traditional method of instruction?
2. What is the achievement level using the keyboarding software?
3. What is the difference in achievement when comparing both methods?
4. What factors contribute to the success of each method?
5. Is there a difference in achievement level based on the availability of a home computer?

Significance of Study

This study was important to Pepin Area School for the following reasons:

1. The study was needed to measure the achievement level using traditional instructional methods of keyboarding. It is important to know the speed and accuracy of the traditional eighth grade keyboarding students in order to compare results.
2. The research was needed to determine appropriate keyboarding software. The researcher needed to select software that was shown to improve speed and accuracy in eighth grade keyboarders.
3. The study was needed to determine if student achievement improves using keyboarding software. Achievement levels were needed in order to compare/contrast with the traditional keyboarding method.

4. The research was valuable when writing keyboarding curriculum because it showed which method was more effective in teaching eighth grade keyboarding.

Limitations of Study

This study will include the following limitations:

1. The study was limited to the eighth grade students at Pepin Area Schools. Seventh grade keyboarders were not included in the study.
2. Instructional days may vary depending on snow days. Snow days have an impact on the amount of practice and lessons covered. Limited practice could affect the achievement level of eighth grade keyboarding students.
3. The teacher's ability to instruct effectively using the keyboarding software. If the teacher doesn't instruct effectively using the software, the eighth grade keyboarding students may not achieve the desired achievement levels.
4. Not all eighth graders have access to outside keyboarding practice. Achievement levels might not reflect the actual skills developed in class.

Assumptions

The assumptions include the following:

1. All students will be present the entire nine week quarter.
2. Students achieve to the best of their ability on assessment days.
3. The teacher is present for all assessment days.
4. The teacher is present during the instruction of the keyboarding software.
5. There are enough computers in the classroom.

Definition of terms

The following are the terms associated with the study:

Electronic Typewriters – An electronic machine with a set of keys that when pushed, causes characters to be printed on paper (Wikipedia, (2007).

GWAM – Gross words a minute. The number of standard words keyed in one minute (Robinson et al., 1999).

Key by touch– Not watching fingers (Robinson et al., 1999).

Keyboarding - A course offered to junior high students at Pepin Area Schools to learn basic keying skills.

Keyboarding Software – Also known as keyboarding tutorial software. A program that teaches typing techniques with a goal of improving performance (Robinson et al., 1999).

Speed – Also known as gwam (gross words a minute). The number of standard words keyed in one minute (Robinson et al., 1999).

Standard Words – Used in keyboarding/typing five characters or combination of five characters and spaces (Robinson et al., 1999).

Word Processing – Is a computer application used for the production of any sort of printable material (Robinson et al, 1999).

Chapter Two:

Literature Review

Introduction

This chapter will include a discussion of the history of keyboarding instruction followed by characteristics of effective keyboarding instruction. The chapter will conclude with an overview of keyboarding software programs.

The History of Keyboarding Instruction

Much research has been carried out concerning keyboarding instruction since Remington first marketed the typewriter in 1873 as a commercial product. McGurrin was the first touch-typist, which he developed in 1878 (Wiseman, 2000). The success of McGurrin's all-finger touch system was proof of the advantage of the typewriting method. However, it took 11 years for Bates Tory to publish a typewriting manual that described the touch-typing system (Bartholome, 2002)

Keyboarding instruction has been in a period of transition over the years. Schools have moved from electronic typewriters to personal computers and word processors (Robinson et al., 1993). Before the mid 1980's typing was rarely taught in middle school because the focus was on preparing high school students for college or for an office occupation. Typing courses were offered through the business education department as elective classes. With the onset of early personal computers, which relied on keying in data, keyboarding became a vital skill for all age groups (Wiseman, 2000). Business educators in the past taught keyboarding at either the middle school level or high school level to students who were planning on pursuing a clerical career. As

technology advanced keyboarding transformed from an elective course offering to a required course offering (Skifstad, 2003).

There is a high percentage of people in all walks of life who use a computer keyboard to increase their productivity at work. No matter what the career or job, a computer keyboard is probably used for communication. Through keyboarding, people in all places take advantage of the Internet's vast links for education, leisure, information and profit (Robinson et al., 1999).

According to the Alaskan Department of Education typewriting and keyboarding are not the same. Keyboarding provides a foundation skill for typewriting or production keyboarding. The focus of keyboarding is entering data. Keyboarding should be taught prior to the grade level at which students begin frequent or repeated use of the keyboard. Keyboarding can be taught on any keyboard. The skill is readily transferable from one standard keyboard to another (Alaskan Department of Education, 1991).

Characteristics of Effective Keyboarding Instruction in the Middle School Grades

In order to get the most benefit from a computer, the user must have competent keyboarding skills. Someone who types 20-25 words per minute is wasting their thoughts on finding the keys. The faster a person can type, the more they can critically think. For example, the person who can key 50 words a minute is free to think about larger issues such as the content of the document they are keying (Robinson et al., 1999).

Keyboarding is the act of placing data into the computer by utilizing a typewriter-like keyboard using the touch typing method (May, 1997). As stated previously keyboarding can be taught on any keyboard (Alaskan Department of Education, 1991).

According to May (1997) the basic keyboarding objectives for unit I instruction (4 ½ week lesson) would resemble the following:

1. Demonstrate the touch-typing method competently.
2. Type 20-25 words per minute.
3. Demonstrate correct typing technique.
4. Demonstrate understanding of the keyboard (page 5).

May (1997) stated that by the time a student gets to unit III, the final unit, they should be able to key 30-35 words per minute.

Skifstad (2003) stated that in the Eau Claire Area School district in Eau Claire, Wisconsin, keyboarding is taught in the fourth and sixth grades. The fourth grade course lasts four weeks and focuses on learning the keys using the textbook and computer software. The sixth grade course lasts six weeks and also introduces alphabetic keys using the textbook as well as computer software. Both courses stress proper keyboarding technique. According to the Alaskan Department of Education (1991) proper keyboarding technique includes the following:

1. Fingers should be curved.
2. Wrist should be low and off the keyboard.
3. Arms should be parallel to the slant of the keyboard.
4. Fingers 1 and 4 anchored to F and J. Keying should be short and snappy.
5. Elbows relaxed and at the sides.
6. Feet flat on the floor, sitting up tall and straight
7. Eyes on copy with monitors 20 to 24 inches away with a 15 to 20 degree slant (page 25).

Robinson et al (1993) stated that keyboarding instruction must center around three historical components: keyboarding, formatting (the arrangement, placement and spacing) of commonly used documents, and document processing (the production quality and quantity of documents processed). Effective keyboard learning and skill development places emphasis on the technique of keyboarding operation (with no time pressure), and then emphasizes speed. Accuracy of copy produced with restricted speed should be the next phase.

The Wisconsin Department of Public Instruction (DPI) has created the Wisconsin Model Academic Standards for Business. The model affirmed that information technology is always changing. Therefore, students must be able to learn current technology and apply it. According to the Wisconsin DPI Business and Information technology standards (2007) students by the eighth grade should be able to apply input technology appropriately, enter and manipulate text and data effectively.

According to the Wisconsin Business and Information Technology Curriculum Planning Guide from the Wisconsin Model Academic Standards for Business (2007), elementary and middle school will focus on instruction in the areas of economic education, keyboarding, computer application and business career exploration. The Wisconsin Business and Information Technology Curriculum Planning Guide B.4.4 standard states that fourth grade students should be able to develop touch key techniques. Standard B.4.6 reveals that fourth grade students should compose simple information using a keyboard. The eighth grade standard B.8.5 says that eighth grade students should be able to demonstrate touch-keyboarding skills at acceptable speed and accuracy levels.

Computer-Assisted Instruction verses Teacher Directed Instruction

In a study by Russin of two sixth grade classes in Middletown, New Jersey computer-assisted instruction was compared with teacher directed instruction. In her research paper Russin (1995) described computer-assisted instruction as a method of teaching touch keyboarding by using software, which correlates with the textbook and appears on the computer screen. She concluded that students who were taught keyboarding by computer-assisted instruction did not perform more effectively than students who were taught keyboarding by teacher directed instruction using a keyboarding textbook. However, the research of Russin revealed that computer-aided instruction along with a keyboarding textbook was more effective than using computer-aided software alone. Russin's research also pointed out that there are a number of different software programs designed to teach keyboarding. She noted that computer game-like drills can be useful to maintain student interest, but without effective keyboarding instruction for finger placement and related practice, bad habits such as hunt and peck keying can develop which can be hard to break.

The Alaskan DPI (1991) noted that a keyboarding instructional software package should not replace the instructor. Games are enjoyable to the student but most often focus on speed rather than technique, which can create bad habits like hunt and peck methods of keying. Keyboarding instructional software should center on sound educational methodology, which focuses on long term speed development. Games should be restricted to drills and enrichment activities.

An Overview of Keyboarding Software Programs

Russin (1995) mentioned several keyboarding software programs such as Mavis Beacon, Typing Tutor, Type to Learn, Master Type, and MicroType. MicroType Pro works with the Keyboarding for Computer Success text. The program provides hints on good typing technique using full-color illustrations, reports typing speed instantly, and sets a new typing speed goal customized to the performance of the student. MicroType Pro allows the students to master new keys, practice techniques, or take timed writings. Students can set a speed goal and are timed to their desired timing. The program will also give feedback to the student as they type (Robinson, et al. 1999).

Another research paper by Skifstad (2003) discussed a software program called NimbleFingers. This keyboarding program enables the student to operate the software from a home or school environment. Skifstad found the program enjoyable to students because of the exercises and warm-up activities, which also included ergonomic exercises for the neck, shoulders and arms.

In a conversation with a business education instructor at the 2007 Fall Wisconsin Business Education Association Conference in Eau Claire, Wisconsin the instructional keyboarding software Typing Time was recommended to the researcher for middle school keyboarding instruction. The Typing Time software is a keyboarding program, which consists of a tutorial, reinforcement activities, educational games and a word processor. These components are combined to help students master the basic keyboarding skills. Each lesson includes several different activities to learn new keys, combine keys, improve keystroking and build skill. There is also a game that challenges

students to improve their keyboarding skills. A Lesson Report reflects the student's performance for each activity (Hoggatt, 2003).

As discussed previously, the most important factor in the success of a keyboarding software program is the combined use of a software-program, textbook, and teacher instruction (Russin, 1995).

Chapter Three: Methodology

This chapter explains the methods and procedures used in this study. The chapter is divided into five subsections: 1) Subjects, 2) Instrumentation, 3) Data collection and recording, 4) Data processing and analysis, 5) Limitations of the methodology or procedures.

Subjects

The subjects for this study were eighth grade keyboarding students at Pepin Area Schools during the 2007-2008 calendar year. The participants of the study were divided into two keyboarding groups. Each group was heterogeneous. The first group consisted of nine students, four boys and five girls. The second group consisted of 10 students, 6 boys and 4 girls. Their prior keyboarding instruction consisted of one academic quarter of keyboarding instruction in the seventh grade, which was instructed by the researcher. The same students also were familiarized with basic computer operation and minimal keyboarding instruction in the fourth through sixth grades.

Eighth grade keyboarding is a required course at Pepin Area Schools. Students must have had seventh grade keyboarding as a prerequisite. The objectives of eighth grade keyboarding are as follows:

1. Operate keyboard by touch
2. Type a variety of documents using the proper format
3. Compose basic documents at the keyboard using touch-typing
4. Improve speed and accuracy within 20-35 words per minute range

The eighth grade-keyboarding students reviewed all the alphabet keys, which consisted of lessons 1-17 during the first half of the course. The objective was to improve speed and accuracy using touch-keying techniques. The second half of the course focused on developing the ability to compose basic documents and also to learn the numeric keys on the keyboard. Speed and accuracy using touch-keying techniques continued to be the focus during the second half of the course.

Each group of eighth grade students participated in one academic quarter. Each quarter lasted nine weeks. The first group in the study began keyboarding class on September 5th, 2007 and concluded on November 2nd, 2007. The second group in the study began keyboarding class on November 5th, 2007 and concluded on January 17th, 2008. Each class met five days a week for 30 minutes approximately 45 times. Both classes met in the identical room with the same teacher and used the identical Dell computers. Both groups keyed lessons from the Century 21 Keyboarding, Formatting, and Document Processing text 5th Edition textbook by South-Western Publishing (Robinson et al., 1993 p. iii). The textbook that both keyboarding groups used was the only keyboarding textbook available.

The second group was the experimental group. Everything was equal with this group except for the use of Typing Time, the computer-aided software. The Typing Time software is a keyboarding program, which consists of a tutorial, reinforcement activities, educational games and a word processor. These components are combined to help students master the basic keyboarding skills. Each lesson includes several different activities to learn new keys, combine keys, improve keystroking and build skill. There is also a game that challenges students to improve their keyboarding skills. A Lesson

Report reflects the student's performance for each activity (Hoggatt, 2003). The students were instructed to key lessons from the textbook for 15 minutes and then were instructed to use the corresponding lesson from Typing Time, the computer-aided software.

Instrumentation

A pretest was developed. The purpose of the pretest was to evaluate the following:

1. Students' knowledge of correct finger placement on the keyboarding
2. Student's GWAM (gross words a minute)

Both groups were requested to fill in a blank keyboard with correct finger placement for all letters including question mark, period, comma, semicolon, quotation marks, spacebar and shift keys (see Figure 1). Pre and post-tests were used to evaluate student's progress and knowledge of correct finger placement on the keyboard. Correct finger placement is crucial for the touch-typing technique.

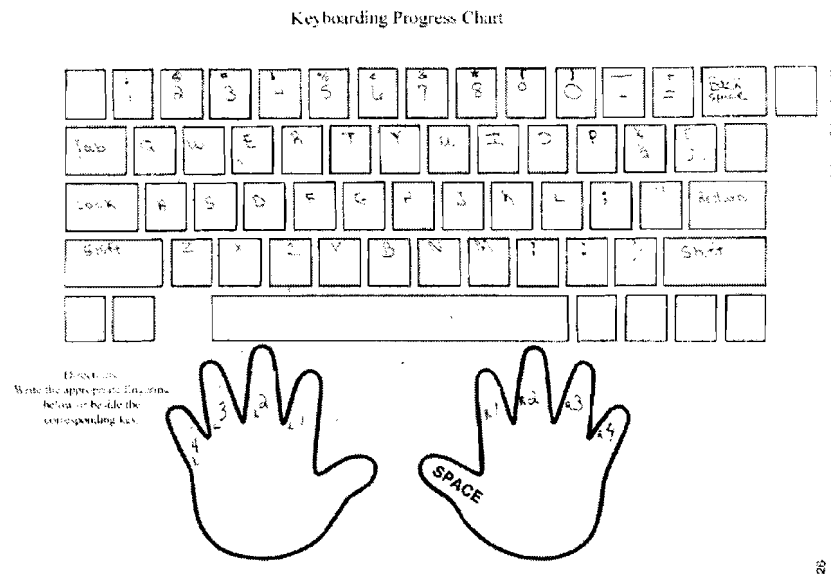


Figure 1. Keyboarding Progress Chart

A GWAM pre-test and post-test was used to measure student progress. The researcher conducted the pre and post GWAM tests to both the control and experimental groups of keyboarding students using the same 23d paragraph on page 43 of the century 21 keyboarding textbook. This particular copy was selected since it included all letters learned. The pre-test students did not have prior exposure to the paragraph before the timing occurred. The post-test students exposure consisted of the pre-test timing. Students were timed using a simple kitchen timer. Students were instructed to leave their computer stations and take a seat at a desk when the timing was finished. The instructor then corrected each student's timing at every one of the computer stations. The results were recorded in the instructor's grade book.

Data Collection

The evaluation of two groups of eighth grade keyboarding students took place over a period of two-nine week periods. The control group of eighth grade keyboarding

students consisted of a group of four boys and five girls. On the first day of class students were requested to fill in a blank keyboard with correct finger placement for all letters. On the second day of class the students were given a GWAM pre-test to establish their individual typing speed. The same students were given a final GWAM post-test and finger placement post-test during the 9th week of class. This final timing test was used to determine their progress. The class began September 5th, 2007 and ended November 2nd, 2007. The researcher was the instructor and evaluator.

The experimental group of eighth grade keyboarding students consisted of a group of six boys and four girls. On the first day of class students were requested to fill in a blank keyboard with correct finger placement for all letters. On the 2nd day of class the students were given a GWAM pre-test to establish their individual typing speed. The same students were given a final GWAM post-test and finger placement post-test during the 9th week of class. This final timing test was used to determine their progress. The class began November 5th, 2007 and ended January 17th, 2008. The researcher was the instructor and evaluator.

Students were timed using a simple kitchen timer. Students were instructed to leave their computer stations and take a seat at a desk when the timing was finished. The instructor then corrected each student's timing at every one of the computer stations. The results were recorded in the instructor's grade book.

Data Analysis

The gross words per minute speeds achieved on one-minute timed-writing pre-tests by the first quarter eighth grade students ranged from 18 GWAM to 42 GWAM; on the post-test, their speeds ranged from 22 GWAM to 42 GWAM.

The gross words per minute speeds achieved on one-minute timed-writing pre-tests by the experimental second quarter eighth grade students ranged from 11 GWAM to 47 GWAM; on the post-test, their speeds ranged from 25 GWAM to 58 GWAM.

Limitations

1. The study was limited to the eighth grade students at Pepin Area Schools. Seventh grade keyboarders were not included in the study.
2. Instructional days varied because of snow days. Snow days have an impact on the amount of practice and lessons covered. Limited practice could affect the achievement level of eighth grade keyboarding students.
3. The teacher's ability to instruct effectively using the keyboarding software. If the teacher did not instruct effectively using the software, the eighth grade keyboarding students may not achieve the desired achievement levels.
4. Not all eighth graders have access to outside keyboarding practice. Achievement levels might not reflect the actual skills developed in class.

Summary

Students from both groups were encouraged to keep their eyes on their copy and hands on their home row keys. They were also told that timings would not count if they displayed incorrect hand positions like hunting and pecking. Both groups were also encouraged to maintain good keyboarding posture. The control and experimental keyboarding students were given practice timings once per week to help students improve their GWAM scores.

Chapter IV

Findings

This chapter depicts the data analysis and objectives of this study. Student's GWAM speed was used for the data analysis. The researcher evaluated the data.

The subjects for this study were eighth grade keyboarding students at Pepin Area Schools during the 2007-2008 calendar year. The participants of the study were divided into two keyboarding groups. Each group was heterogeneous. The control group consisted of nine students, four boys and five girls. The experimental group consisted of 10 students, 6 boys and 4 girls. The evaluation of two groups of eighth grade keyboarding students took place over a period of two-nine week periods. A GWAM pre-test and post-test was used to measure student progress. The researcher conducted the pre and post GWAM tests to both groups of keyboarding students using the same 23d paragraph on page 43 of the century 21 keyboarding textbook.

The gross words per minute speeds achieved on one-minute timed-writing pre-tests by the first quarter eighth grade students ranged from 18 GWAM to 42 GWAM; on the post-test, their speeds ranged from 22 GWAM to 42 GWAM.

The gross words per minute speeds achieved on one-minute timed-writing pre-tests by the experimental, second quarter eighth grade students ranged from 11 GWAM to 47 GWAM; on the post-test, their speeds ranged from 25 GWAM to 58 GWAM. The results are shown in Table, 1 Pre and Post-Test Using Traditional Instruction.

Table 1

Pre and Post-Test Using Traditional Instruction

Pre-Test	42	18	38	32	30	32	30	24	18	Mean= 29.33
Post-test	42	22	34	40	35	33	31	27	22	Mean=31.78

The pre-test range was 18-42 and the post-test range was 22-42. The mean of the pre-test is 29.33 and the mean of the post-test is 31.78. There was a 2.45 increase in the mean, which is an 8% increase.

To determine if there was significance between pre-test and post-test mean scores, a t-test was run. A t-test is used to test for the significance of a difference between two normally distributed averages. Table 2, Pre and Post-Test Using Traditional Instruction shows the results of the t-test. The calculation of $t = .677$ indicates no significant difference was found. However, the standard deviation was smaller in the post-test indicating the mean values were not as expanded as in the pre-test and therefore less unpredictable. Table 2 also shows the degrees of freedom of 16 and a 95% confidence interval for the mean.

Table 2

Pre and Post-Test Using Traditional Instruction

Control Group	Standard Deviation	df	t
Pre-test	8.19		
Post-test	7.10		
T-Test	7.66	16	.677

To determine if an intervention strategy worked, the Typing Time Instructional Software was used. The results are shown in Table 3, 8th Grade Keyboarding Experimental Group Results Using Typing Time Instructional Software. Using the software the mean of the pretest is 27 and the post-test is 36.3. The mean increased 9.3 points, which is a 34% increase. The pre-test range was 11-47 while the post-test range was 22-52.

Table 3

8th Grade keyboarding Experimental Group Results Using Typing Time Instructional Software

Pre-Test	23	28	20	15	43	38	11	13	47	32	Mean= 27
Post-test	28	33	31	30	50	40	30	22	52	47	Mean=36.3

To verify if the means were significant between pre-test and post-test scores a t-test was again run. Table 4, Pre and Post-Test Using Typing Time Instructional Software shows the results of the t-test. The calculation of $t = 1.79$ indicates no significant difference was found. However, it should be noted that post-test standard deviation was larger indicating a larger spread of scores. Table 4 also shows the degrees of freedom of 18 and a 95% confidence interval for the mean.

Table 4

Pre and Post-Test Using Typing Time Instructional Software

Experimental Group	Standard Deviation	df	t
Pre-test	7.10		
Post-test	10.3		
T-Test	11.6	18	1.79

To determine if there was significance between the pre-test mean scores, a t-test was run. Table 5, the Difference In Achievement When Comparing Both Pre-Tests, shows the results. The calculation of $t=.468$ indicates no significant difference was found. However, the standard deviation was larger in the 2nd quarter pre-test showing a larger spread of scores. Table 5 shows the degrees of freedom of 17 and a 95% confidence interval for the mean.

Table 5

The Difference In Achievement When Comparing Both Pre-Tests

Keyboarding groups	Standard Deviation	df	t
Pre-test control	8.19		
Pre-test experimental	12.8		
T-Test	10.8	17	.468

To verify if the means was significance between both post-test scores a t-test was run once more. Table 6, The Difference In Achievement When Comparing Both Post-

Test shows the results of the t-test. The calculation of $t = 1.10$ indicates no significant difference was found. However, it should be noted that the 2nd quarter post-test standard deviation was larger indicating a larger spread of scores. Table 6 shows the degrees of freedom of 17 and a 95% confidence interval for the mean.

Table 6

The Difference In Achievement When Comparing Both Post-Tests

Keyboarding groups	Standard Deviation	df	t
Post-test Control	7.10		
Post-test Experimental	10.3		
T-Test	8.94	17	1.10

Finger Placement Test

To determine if both the control and experimental group of keyboarding students were knowledgeable of finger placement a pre and post-test was given. Table 7, *Finger Placement Test*, indicates the results of the test. The finger placement pre-test showed a 2% difference between the control group of keyboarding students and experimental group of keyboarding student's test. The post-test average scores of 98% were the same for both groups. The control students improved their scores by two percentage points and the experimental students improved by three percentage points. The results indicate that both groups were above average in their knowledge of finger placement on the keyboard.

Table 7

Finger Placement Test

	Pre-Test Average Percent	Post-Test Average Percent
Control Group of keyboarding students	97%	98%
Experimental Group of keyboarding students	95%	98%

Discussion

As discussed previously in chapter two, the most important factor in the success of a keyboarding software program is the combined use of a software-program, textbook, and teacher instruction (Russin, 1995). The 2nd semester keyboarding students received the recommend instruction for keyboarding software programs, which included textbook and keyboarding software instruction. The experimental group of 8th grade-keyboarding students demonstrated a slightly greater improvement over the control group of 8th grade-keyboarding student's pre and post-test GWAM timing. However, all of the t-tests conducted indicated no significant difference was found. The Finger Placement Test indicated that students were above average in their knowledge of finger placement on the keyboard.

Summary

The above data and discussion shows the results of two 8th grade-keyboarding classes. The 8th grade-keyboarding students from the control group demonstrated slight improved performance between the pre-test GWAM timing and the post-test GWAM timing. The experimental group of 8th grade-keyboarding students demonstrated a slightly greater improvement over the 1st semester 8th grade-keyboarding student's pre

and post-test GWAM timing. The students who used the instructional keyboarding software appeared to have a slight increase in GWAM timings as compared to the students who used the traditional textbook method. However, all of the t-tests conducted indicated no significant difference was found.

Chapter Five

Summary, Conclusions, and Recommendations

This chapter will present a summary of research, conclusions and recommendations.

Summary

The purpose of this study at Pepin Area Schools was to determine which method of keyboarding instructions was more effective, using the traditional textbook instruction or by using keyboarding software to teach eighth grade keyboarding. The study used traditional textbook instruction to teach eighth grade students keyboarding during the first quarter of the 2007-2008 school year at Pepin Area Schools. The second group was the experimental group. Everything was equal with this group except for the use of Typing Time, the computer-aided software. The Typing Time software is a keyboarding program, which consists of a tutorial, reinforcement activities, educational games and a word processor. These components are combined to help students master the basic keyboarding skills. Each lesson included several different activities to learn new keys. Each class was evaluated based on speed and accuracy using a pre-test and post-test. The study was needed to determine if student achievement improves using keyboarding software.

Data was collected over a period of two nine-week periods. The control group of 8th grade keyboarding students was administered a pre-test and post-test GWAM timing. The experimental group of 8th grade keyboarding students was also administered the same pre-test and post-test GWAM timing. The research was valuable when writing keyboarding curriculum because it showed which method was more effective in teaching eighth grade keyboarding. The study was limited to the eighth grade students at Pepin Area Schools. Seventh grade keyboarders were not included in the study.

Conclusions

In this section each research question from Chapter 1 will be restated and answered.

Research Question #-1. What is the achievement level when using the traditional method of instruction?

The study found that the pre-test range and the post-test range was not significant after nine weeks of instruction using the traditional method of instruction. The mean of the pre-test was 29.33 and the mean of the post-test was 31.78. To determine if there was significance between pre-test and post-test mean scores, a t-test was run. A t-test was used to test for the significance of a difference between two normally distributed averages. The pre and post-test using traditional instruction showed the results of the t-test of $t = .677$ which indicated no significant difference was found. However, the standard deviation was smaller in the post-test indicating the mean values were not as expanded as in the pre-test and therefore less unpredictable.

To determine if the control group of keyboarding students were knowledgeable of finger placement a pre and post-test was given. The study showed that the control group of students improved their scores by two percentage points. Both the pre and post-tests indicated the students were above average in knowledge of finger placement on the keyboard.

Data analysis has shown that students did learn from the traditional method of instruction and there was gain between the pre and post-test.

Research Question #-2. What is the achievement level using the keyboarding software?

The study found that the pre-test range and the post-test range was not significant after nine weeks of instruction using keyboarding software. The mean of the pre-test was 27 and the mean of the post-test was 36.3. The mean increased 9.3 points, which is a 34% increase. To determine if there was significance between pre-test and post-test mean scores, a t-test was run. The pre and post-test using keyboarding software showed the results of the t-test of $t = 1.79$ which indicated no significant difference was found. However, it should be noted that post-test standard deviation was larger indicating a larger spread of scores.

Data analysis has shown that there was learning and there was a higher increase in pre and post-test scores than the traditional method of delivery.

Research Question #-3. What is the difference in achievement when comparing both methods?

The results of this study helped to determine the following conclusions. The experimental group of 8th grade-keyboarding students averaged higher on the post-test than the control group of 8th grade-keyboarding students, with a difference of 4.52 GWAM. The experimental group had an average increase of 9 GWAM between the pre-test and the post-test. The experimental group's average GWAM was 36.3, which is above the recommended top GWAM of 35 for 8th grade keyboarding students at Pepin Area Schools. However, after administering a T-Test, which tests for significance between the means, the researcher determined there was no significant difference between the post-tests. The research concluded that there was not significant improvement in GWAM between the control and the experimental group.

Both groups appear to have above average knowledge of finger placement on the keyboard by scoring an average score of 98% on the post-test. It is concluded that there is no difference between the control group and the experimental group's knowledge of finger placement.

Research Questions #-4. What factors contribute to the success of each method?

The results of the study concluded that the achievement level when using the traditional method of instruction and the achievement level using the keyboarding software was not significant. The researcher's observation also concluded that even though the T-Test revealed no significance difference between the means of the post-tests, the experimental group seemed to enjoy keyboarding more with the addition of the Typing-Time keyboarding software.

Research Question #-5. Is there a difference in achievement level based on the availability of a home computer?

The study found that the entire control group of 8th grade-keyboarding students and the experimental group 8th grade-keyboarding students had access to a home computer. The results of the study concluded that the achievement level when using the traditional method of instruction and the achievement level using the keyboarding software was not significant based on the availability of a home computer.

Recommendations

The suggestions, which follow, are derived from the results of the study.

1. A change in curriculum for 8th grade keyboarding at Pepin Area Schools is recommended based on the results of the study. A change in curriculum is recommended because there was no significant difference in GWAM scores

between the control and experimental group of 8th grade-keyboarding students. Therefore, implementing a change in curriculum would not cause a decrease in the GWAM performance. The change in curriculum would not involve a major change in the curriculum that is currently in use or a large time investment by the instructor to implement these changes.

2. It is recommended that the change in curriculum will include using traditional textbook keyboarding instruction for the first half of the class period and the keyboarding software Typing Time for the second half of the class period. From the observation of the researcher the use of variety in the classroom keeps students motivated and seems to enhance the keyboarding experience.
3. As a result of the study it is recommended that the 7th grade-keyboarding curriculum at Pepin Area Schools also implement the same curriculum approach as with the 8th grade-keyboarding curriculum.
4. Further research needs to be conducted to compare the achievement levels of students who have taken 7th grade keyboarding and 8th grade keyboarding using the textbook keyboarding instruction for the first half of the class period and the keyboarding software Typing Time for the second half of the class period.

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