

KEYBOARDING INSTRUCTION IN SCHOOLS: A Technology Action Research Plan

SECTION I

Introduction

In our modern society, children first come into contact with computers earlier and earlier in life. No longer is it uncommon for kids to be accomplished users of technology even before they can read. Computers are commonplace in most public education classrooms from the primary grades through high school. Various technological devices permeate the lives of college students as indispensable tools for education. Even most blue collar jobs require rudimentary computer skills at the very least. Technology of all kinds has completely saturated our culture at nearly every level.

Despite recent advances in such alternative input technologies as handwriting recognition and speech recognition, the manual QWERTY keyboard remains the primary input device of the vast majority of computer systems. Given the rapid proliferation of technology as well as the ubiquitous presence of the QWERTY keyboard, educators must ask themselves what responsibilities they have in preparing students for the technological realities of the future. Since a keyboard is required to operate almost any computer, should keyboarding as a skill be taught as part of the curriculum? If it is taught, at what age is it appropriate to begin keyboarding instruction? Which methods of teaching keyboarding are most effective? This study will outline a plan to find answers to these questions.

This study will be conducted at the middle school located in Sullivan, Missouri, a small town of approximately 6000 people in the east central part of the state. As per district records, Sullivan Middle School currently serves 450+ students in 6th through 8th grades and has a

poverty population of 44%. The Sullivan School district as a whole is represented by 98% Caucasian with the remaining 2% represented by Asian, Black, Hispanic, and Indian students. For several years, middle school students have been required to complete at least one semester of a daily 43-minute keyboarding class before leaving for high school. The instructor bases the keyboarding curriculum on the *MicroType 4* software, but also utilizes a textbook titled *Century 21 Jr: Input Technologies and Computer Applications* and the accompanying *CheckPro* software. No keyboard covers of any kind are currently being used on the computer lab's 22 student workstations.

Area of Focus Statement

The purpose of this study is to examine the relevance and most effective methods of keyboarding instruction for middle school students.

Research Questions

1. Does keyboarding instruction help students in their general coursework as they progress through middle school?
2. Does age and/or maturity influence student performance in keyboarding?
3. Will students who practice keyboarding without looking at their hands (touch-keying) achieve greater increases in speed and/or accuracy?
4. Which is more effective in developing touch-keying skills: encouraging and trusting students on their own to not look at their hands, covering the keys with a keyboard skin, or using a visual shield to block the view of both the hands and the keyboard?

Related Literature

As was stated in the introduction, computers have become an essential and basic tool for this generation of learners. Every subject taught at every level, including kindergarten, includes computer based lessons. Children in grade school spend an ever-increasing amount of time on computers (Nicols, 2004; Hoggatt, 1998). Computer based learning is becoming more accepted as both a primary instructional tool and as a support for the classroom teacher. However, despite the extensive early exposure, many students are entering middle school with computer literacy but without accompanying keyboarding skills (Reagan, 2000).

Many studies agree that touch-typing is a key “basic lifelong skill” (Nichols, 2000; Olinzock, 1998). Learning correct touch-typing technique also assists students in other subject areas such as spelling, grammar and even foreign language (Haigh, 2004). It is generally accepted that keyboarding skills, touch-typing specifically, is a key requirement to learning.

So the question is, what is the best way to teach young students to touch type, and eliminate the need to look at their hands? There are two readily accepted methods of touch-typing instruction:

1. Teacher intensive meaning the teacher has developed their own instruction based on experience and research.
2. Software tutorials in which computer programs guide students through keyboarding lessons and monitors student progress. (Nichols, 2004)

Some researchers state that elementary age students need a minimum of 4 to 6 weeks of 20-30 minute daily instruction to achieve touch-typing mastery (Sormunen, 1991; Nichols, 2004). However, with increasing demands on classroom instruction time, most teachers must adopt a “best practices” approach developed through years of experience and observation of keyboard instruction (Nichols, 2000, p. 176).

Keyboard learning and games have proven successful (Haigh, 2004). For middle school students an approach combining keyboard covers, drill and practice and typing software that incorporates typing games for motivation has delivered excellent results (Reagan, 2000). In general, most studies seem to indicate that touch-typing is an essential skill that will help students in many disciplines.

Description of Intervention or Innovation

As mentioned above, keyboarding skills are already being taught at Sullivan Middle School in a semester long class. No intervention will be necessary to determine the benefits of keyboarding instruction on general coursework. The same is true in examining how age and maturity affects keyboarding performance. In these two areas the study will primarily focus on evaluating the effectiveness of the existing system.

Since no covers of any kind are currently being used on the computer workstations, covers will need to be introduced for the purpose of this study. Visual shields and skins are easily added and removed so different methods will be used for each group. Groups will consist of two classes each. One group will use visual shields, another will use keyboard skins and the third group will act as a control using no apparatus.

SECTION II

Data Collection Strategies

Because of the nature of the research questions in this study, information will need to be gathered from both subjective and objective sources. As such, surveys and checklists will be used to provide qualitative data while typing tests and grade reports will supply quantitative data. Due to the fact that the Keyboarding instructor will be conducting the majority of this research, some bias will likely be introduced to the study. However, the wide variety of data sources as

well as the concrete nature of the qualitative data should provide a broad enough picture to minimize the influence of bias.

Data Sources

Opinion Survey (*Research Question 1*) - This Likert scale survey will be given to all 7th/8th grade students who have taken Keyboarding during a previous school year. Questions will be designed to determine how these students feel their keyboarding instruction has helped them in school. Some questions will also be asked to evaluate whether these past students are still using correct keyboarding techniques.

8th Grade Teacher Survey (*Research Question 1*) – On this semantic differential survey, the 8th grade teachers will be asked to rate the general academic performance of 30 selected students. Half of the selected students will be those who have taken Keyboarding during a previous school year and half will be students who have not yet taken the course.

Attitude/Technique Survey (*Research Questions 2, 3*) – The anonymous survey will be administered in the last weeks of the semester to all current Keyboarding students regardless of grade level. The questions will help establish how students feel about Keyboarding class and also whether the students are using correct keyboarding technique. See Appendix D.

Grade Reports (*Research Question 1*) – Grade cards will be pulled for 50 selected 7th/8th grade students at the end of the school year. Half of the selected students will be those who have never had Keyboarding class. The remaining students will have had Keyboarding at some point while attending Sullivan Middle School, but not necessarily during the current school year.

Pre/Post Typing Tests (*Research Questions 2, 3, 4*) – The same test will be administered during the first and last weeks of the semester. Using the MicroType 4 software, students will complete several lines of typing and also a full paragraph to determine their speed and

accuracy. No covers of any kind will be used on the pretest. On the post-test, students will use the same innovations they studied with throughout the semester.

Touch-Typing Test (*Research Question 4*) – Administered at mid-semester (after-all alphabetic keys have been introduced and practiced), this test will consist of 1-minute of typing with the hands completely covered. All students will type the same sentences. The focus of this test will be on accuracy, though students are expected to get through at least one full sentence before time expires.

Teacher Checklist (*Research Questions 2, 3, 4*) – The checklist is designed to help facilitate teacher observations of keyboarding technique. Each student will be observed three times: at the beginning of the semester, mid-semester, and at the end of the semester.

Data Analysis Plans

Opinion Survey (*Research Question 1*) - For each item on the survey, the mean score will be calculated and compared to identify in which areas students feel keyboarding has been most and least beneficial. The survey data will also be used to calculate the percentage of former students who are still using correct keyboarding techniques when typing.

8th Grade Teacher Survey (*Research Question 1*) – The scores from each 8th grade teacher will be averaged together to determine a semantic differential score for each individual student. The students will then be grouped according to whether they have taken keyboarding and the mean semantic differential score will be calculated for each group. The group scores will be compared and analyzed.

Attitude/Technique Survey (*Research Questions 2, 3*) – Surveys will be grouped by grade level. For the grade level groups, the mean score for each item on the Likert scale will be determined. Results will be used to identify general attitudes and keyboarding techniques for the grade level groups.

Grade Reports (*Research Question 1*) – Grade reports will be divided into two groups based on whether the student has had Keyboarding or not. Using the cumulative grade point averages for the current school year, the mean GPA for each group will be calculated then compared to determine which group was more academically successful.

Pre/Post Typing Tests (*Research Questions 2, 3, 4*) – Test results will be grouped three ways: by practice method (skins, shields, no apparatus), by grade level, and by touch-typists/non-touch-typists (as per teacher observation). For each group, the mean speed and accuracy score will be calculated and compared.

Touch-Typing Test (*Research Question 4*) – Test results will be grouped by practice method (skins, shields, no apparatus). The mean accuracy score (as a percentage) for each group will be determined and compared to establish which practice method was most effective in increasing accuracy.

Teacher Checklist (*Research Questions 2, 3, 4*) – Checklists will also be grouped by practice method (skins, shields, no apparatus). The mean score for each item on the checklist will be calculated for each group. Comparing the results by group should determine which practice method produced the best technique results.

SECTION III

1. At this point, it is anticipated that only the Keyboarding teacher will be involved in this action research project, not including the 8th grade teachers who will be completing a survey. However, if the project goes well, it is possible to expand it to other campuses in the Sullivan School District, particularly the Elementary School where they also teach some keyboarding skills during computer lab time.

2. The principal's permission would definitely be required to begin this project because some funds will need to be appropriated to buy needed equipment (skins and shields). Parent permission would not be required because all of the methods being tested are appropriate approaches being used in other school districts. The purpose of this study is to determine which method of those being used is the best for our students. Also, while grade reports will be used, these records are openly available to all teachers in the building. Student names and their participation will not be made public.
3. The project will encompass all of the 2007-08 school year. The data collected from keyboarding performance tests and observations would primarily be gathered during the first semester when the most Keyboarding courses are being offered. However, some of the surveys would not be given until the end of the school year and the grade reports will also be at the end of the school year. Analyzing and interpreting of data will be an ongoing process as the data becomes available. The final write-up would be completed during the summer of 2008.
4. Recommend actions would be in place for the 2008-09 school year.
5. Since the study would be mostly self-contained in the Keyboarding classroom environment, recommendations would be implemented by the Keyboarding teacher who conducted the research. The only exception would be if major changes to curriculum would be required which would necessitate greater involvement by administrative personnel. School culture should not be a factor.
6. To monitor the effectiveness of recommended actions, quantitative data in the form of performance tests would continue to be gathered each semester. If there appears to be a reduction in effectiveness over time, the study will need to be revisited and further research will be conducted.

REFERENCES

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- Wiseman, G. (2000). Keys at their fingertips: A study supporting development of a resource package for the teaching of touch-keyboard skills in upper elementary classrooms equipped with portable keyboards. Walden University: Academic, 8-194.

APPENDIX A: LITERATURE MATRIX

Area of Focus Statement:

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		<u>Variables</u>									
Authors	Year	Teacher Intensive Instruction	Software Tutorial (CAI)	Student Time	Covers	Non-Covers	Grade Level	Color Codes	Game Activities	Tech Lab	Blank Keyboards
Wallace, Jane Bruner	2000	*	*	*		*	*				
Regen, Steven Dallas	2000	*	*	*	*	*	*				
Wiseman, Gay	2000			*	*					*	*
Haigh, Gerald	2004	*		*		*		*	*		*
Nichols, Lois	2004	*	*	*	*	*	*			*	

APPENDIX B: DATA COLLECTION MATRIX

Area of Focus Statement:

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Research Questions	Data Source		
	1	2	3
1. Does keyboarding benefit general coursework?	Opinion Survey (7 th /8 th graders)	8 th Grade Teacher Survey	Grade Reports
2. Does age/maturity influence keyboarding performance?	Attitude/Technique Survey (6 th ,7 th ,8 th graders)	Pre/Post Typing Tests (Speed & Accuracy)	Teacher Checklist (Technique)
3. Will practicing touch-keying improve speed and/or accuracy?	Attitude/Technique Survey (6 th ,7 th ,8 th graders)	Pre/Post Typing Tests (Speed & Accuracy)	Teacher Checklist (Technique)
4. Which method is best in developing touch-keying?	Touch-Typing Test (Hands Covered)	Pre/Post Typing Tests (Speed & Accuracy)	Teacher Checklist (Technique)

APPENDIX C: DATA ANALYSIS MATRIX

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Data Collection Technique	Data Analysis Strategy		
	1	2	3
Opinion Survey (7 th /8 th graders who've taken Keyboarding during a previous school year)	Determine mean score for each item on Likert scale survey	Identify in which areas students feel keyboarding has been most/least beneficial	Calculate percentage of students who still use correct keyboarding techniques when typing
8 th Grade Teacher Survey on student performance Reports (30 selected 7 th /8 th graders)	Determine semantic differential score for each student on each survey	For each student, find average semantic differential score from all teacher surveys	Compare results for students who have never had keyboarding and those who have (15 each)
Attitude/Technique Survey (6 th , 7 th , 8 th graders currently in Keyboarding)	Group surveys by grade level	For each group, determine mean score for each item on Likert scale survey	Identify general attitudes and keyboarding techniques for each group
Pre/Post Typing Tests (MicroType 4 Software)	Group test results by practice method and determine mean score for each method	Group test results by grade level and determine mean score for each group	Compare results of touch-typists & non-touch typists
Touch-Typing Test (Hands Covered) measuring accuracy at mid-semester	Group student test results by practice method (skins, shields, no apparatus)	For each group, determine average accuracy score (percentage)	Compare mean scores to determine which method produced better typing accuracy
Grade Reports (50 selected 7 th /8 th graders – end of year)	Separate students who have never had keyboarding and those who have (25 each)	For each group, determine mean GPA for the current school year	Compare mean GPAs to determine which group was more academically successful
Teacher Checklist for observing keyboarding technique	Group student checklists by practice method (skins, shields, no apparatus)	For each group, determine mean score for each item on checklist	Compare mean scores to determine which method produced better technique results

APPENDIX D: DATA COLLECTION INSTRUMENT

Attitude/Technique Survey
(6th, 7th, 8th graders currently in Keyboarding)
Likert style survey

Grade (Circle One): 6th 7th 8th

Instructions: Please circle the one response that most closely reflects your opinion.

	<u>Strongly Agree</u>	<u>Agree</u>	<u>Undecided</u>	<u>Disagree</u>	<u>Strongly Disagree</u>
1. I like using a computer	5	4	3	2	1
2. The computer is an important tool for my school work	5	4	3	2	1
3. Learning to type accurately is important to me	5	4	3	2	1
4. Learning to type quickly is important to me	5	4	3	2	1
5. Learning good keyboarding skills will benefit my personal life	5	4	3	2	1
6. Learning good keyboarding skills will help me in school	5	4	3	2	1
7. When doing school work, I would rather type than write by hand	5	4	3	2	1
8. I frequently look at the keyboard while typing	5	4	3	2	1
9. I return my fingers to home row position after striking each key	5	4	3	2	1
10. I demonstrate good posture while typing	5	4	3	2	1

	<u>Strongly Agree</u>	<u>Agree</u>	<u>Undecided</u>	<u>Disagree</u>	<u>Strongly Disagree</u>
11. Keyboarding class is a waste of time	5	4	3	2	1
12. My friends think good keyboarding skills are important	5	4	3	2	1
13. I use correct typing technique when sending email or instant messages from home	5	4	3	2	1
14. I am satisfied with my current level of keyboarding ability	5	4	3	2	1
15. I am able to type numbers and special characters without looking at the keyboard.	5	4	3	2	1
16. I peek at the keyboard and take my hands off home row when the teacher isn't watching	5	4	3	2	1
17. Keyboarding class has helped me improve my typing ability	5	4	3	2	1
18. I have daily access to a computer outside of school	5	4	3	2	1
19. I challenge myself to improve my keyboarding skills	5	4	3	2	1
20. Computers skills will be useful to me in high school and college	5	4	3	2	1

Keyboarding, Digital Literacy, & Coding. Powerful District & Classroom Management. FREE for Everyone! As part of our focus on typing an essential 21st century communication skill students need to succeed in school and beyond we organized a district-wide keyboarding competition, with 6,200 student participants, using Typing.com. Christine Mueller. Oklahoma, US. Keyboarding instruction at the Toronto District School Board pilot study 2016-17: Recommendations for policy and practice. (Research Report No. 17/18-1). Toronto, Ontario, Canada: Toronto District School Board Reproduction of this document for use in the schools of the Toronto District School Board is encouraged. For any other purpose, permission must be requested and obtained in writing from: Research & Information Services Toronto District School Board 1 Civic Centre Court, Lower Level Etobicoke, ON M9C 2B3 Fax: 416-394-4946 Every reasonable precaution has been taken to trace the owners