

## Touch Typing: Is It a Required Skill?

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**Abstract**

This study investigated the correlation between typing speed and technique in daily keyboard users. A survey was used to collect typing tests results and related information. Based on the typing test scores and survey responses, no correlation was found between typing speed and technique. Most participants described their typing technique as touch typing, even without formal instruction in the technique. All participants typing speed was above the average composition rate, 19 wpm. The survey sample size was small; therefore further research is required to validate these findings.

### TOUCH KEYBOARDING: IS IT A REQUIRED SKILL?

Computers have become commonplace in the school, workplace, and home. The keyboard is still the most prevalent device for text entry. Voice control and input have not reached this level. Even touch pads, such as the iPad still provide a QWERTY keyboard.

For this research, the terms *touch keyboarding* and *touch typing* are equivalent. Both refer to the QWERTY method of typing without looking at the keyboard. The method was originally invented in conjunction with the typewriter and migrated to the computer keyboard. The terms *typing* and *keyboarding* are used to describe text entry on the computer using all methods, touch typing, hunt and peck, or self invented methods.

Public education has begun to include touch keyboarding speed and accuracy requirements in their standards, and touch keyboarding instruction in elementary schools (Morton, 2010). As technology developed over the last quarter century, many people learned to use computers effectively without formal touch typing instruction. Now that computers are generally available, do students need to learn the QWERTY touch typing system in lower elementary school to use the computer effectively, or are “hunt and peck” and other self invented methods sufficient?

Participants in this research included both those who touch type, and those who either “hunt and peck” or invent their own systems. This research collected information from adults on typing speed, method, instruction, and keyboard use. It investigated the correlation between typing speed and method.

#### **Review of Literature**

“Who Touch Types?” Dr Leigh Zeitz (2008b) posted this question to his blog, “About Keyboarding Research” in 2008 after researching this question with the help of a resource

librarian. He became interested in this question after one of his readers found a statistic on the web stating that only 10% of Americans touch type. Dr. Zeitz received no substantial comments on this blog post. This literature review yielded no better results. Some research has been done on when and how touch typing should be taught. Dr. Zeitz (2008a) recognized that “ efficient keyboarding skill clears the path to effective expression”. As soon as students starts to use a computer they should start to learn proper keyboarding technique. The computer, the keyboard, and the word processing software can be an effective tool in the primary grades to improve writing skills (Franz, 2000). Many children in primary grades find it is easier to learn some writing skills on the computer, such as correct spacing between words and letters. Using the computer keyboard lets students who struggle with handwriting skills focus on composition.

High School English teachers in the 1980’s recognized the benefits to teaching writing with a word processor (Koenke, 1987). That may be when consideration was first given to the advantages of teaching touch keyboarding skills before high school.

The article Words Per Minute (2010) uses a standard unit of measure to list the speeds of input activities such as typing, handwriting activities, and shorthand. For example the average transcription rate using a keyboard is 33 wpm, while writing by hand is 22 wpm. See Appendix A for a full list of these statistics and a description of the method used to calculate words per minute (wpm), the method to measure typing speed.

### **Method**

The data for this research was collected using an online typing test, and an online survey website. Participants self-reported the results of the typing test in the survey. The survey data included typing test results, current typing method, amount of keyboarding instruction, estimated daily keyboard use, and demographic information. There was some risk that participants would

not self-report accurately, particularly the results of the typing test. The survey was anonymous and voluntary with no incentive to do this.

The participants in this research were over age 18 and no longer attending high school. There was no maximum age, however the survey and typing test were completed online, limiting participants to regular computer users. The participants were selected using a convenience sample. The typing test and survey instructions were emailed and posted on a social networking website. This resulted in some amount of snowball sampling. The objective was to obtain at least 50 responses. The maximum number of responses was 100. This is a limitation of the survey tool subscription level.

The online survey website <http://www.surveymonkey.com> was used to create and administer the survey. This site was selected for its survey construction and administration methods, data collection capability, and familiarity to participants. The typing test website was <http://www.typeonline.co.uk/typingspeed.php>. This website was selected by comparing it with other free online typing test sites. It is easy to use, and has a minimum amount of advertising.

As responses to the survey were received they were manually accumulated in a spreadsheet for analysis. The initial data analysis focused on the correlation between typing speed and method. Other possible typing speed correlations, such as instruction, and time spent using the keyboard, were also considered.

The only ethical concern could have been identification of participants. The survey website does not require a login or collect information as part of administering a survey. It does record the IP address, date, and time with each response. The survey included an optional question for users to enter their email address if they were interested in the results of the research. No identifying information is included in this research paper.

## Results

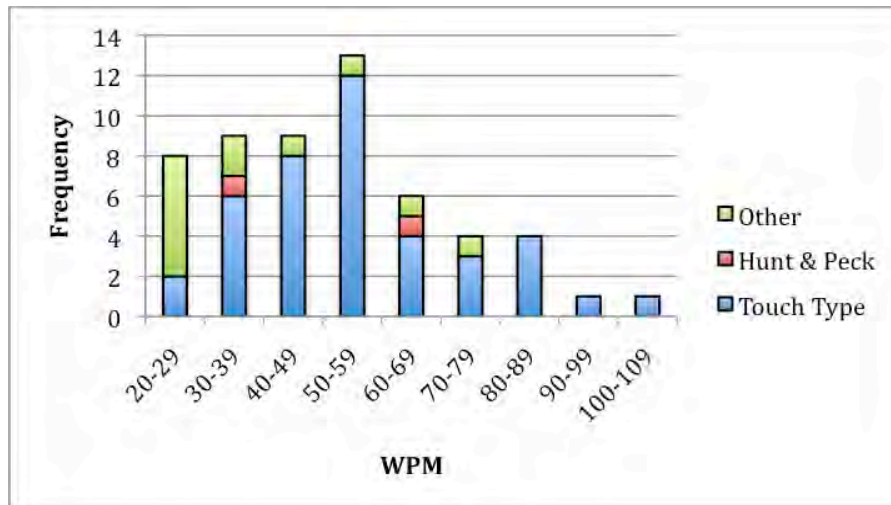
Fifty-five participants responded to the survey over a three week period. Participants each took a typing test that measured speed in words per minute and counted errors. The typing test could be taken multiple times. Participants then completed a short survey that collected information on typing instruction, and keyboard use, in addition to typing speed and errors. Appendix B contains the detailed survey data. Table 1 shows the measures of central tendency and variability of the numeric variables, typing speed (**WPM**), age (**Age**), combined years of work and school post high school (**Years Work & School**), hours per day spent using a keyboard (**KBD Hours**). It is interesting to note that typing speed (**WPM**) has a fairly normal, not skewed, distribution.

Table 1

*Numeric Variables Measures of Central Tendencies and Variability*

<b>Numeric Variables</b>	<b>Count</b>	<b>Mode</b>	<b>Median</b>	<b>Mean</b>	<b>Range</b>	<b>Variance</b>	<b>Std Dev</b>
<b>WPM</b>	55	52	51	51.15	20 - 103	384.98	19.62
<b>Age</b>	55	25	47	45.07	22 - 78	250.74	15.83
<b>Yrs Work &amp; School</b>	55	25	26	27.56	4 - 59	239.58	15.48
<b>KBD Hours</b>	55	2	4	5.64	1 - 20	21.16	4.60

To determine correlation between typing speed and technique, typing speed is categorized using categories of 10 wpm over the range of the reported typing speeds. Figure 1 uses a stacked column chart to show frequency of typing speed by technique. Only two participants described their typing technique as “hunt and peck”. The typing speed for the typing technique “other” varies over the range of speeds reported. See Appendix C for the description provided by participants when specifying a typing technique of “other”.



*Figure 1*

Frequency of Typing Speed by Technique

### **Correlation of Typing Speed and Technique**

The chi-square computation for the relationship between typing speed and technique when the three typing technique categories were considered separately resulted in a probability of 0.110. Therefore the null hypothesis is accepted, there is no relationship between typing speed and technique. The calculations for this analysis are in Table D1.

After reviewing the comments associated with the typing technique “other”, it could be appropriate to combine the two typing technique categories, “hunt and peck”, and “other”. This computation resulted in a chi-square probability of 0.042. In this case the null hypothesis could be rejected, there may be a relationship between typing speed and technique. The calculations for this analysis are in Table D2.

Before accepting these conclusions the assumptions for Pearson’s chi-square test (2010) should be reviewed. In both analyses the values in the expected cell count do not meet the “5 or more” rule, that 80% of cells in the table have a value of 5 or more. The sample size for this research is quite small, and would be appropriate for a population of less than 100 (Johnson &

Christensen, 2008). Therefore this research must be considered explorative and yields interesting opportunities for further research.

### Correlation of Other Variables

Further analysis of the survey data include the correlation between typing speed (  $r$  - **WPM Correlation Coefficient**), and keyboard hours per day (**KBD Hours**), age (**Age**), years of school post high school (**Yrs Post HS**), and years of work(**Yrs Work**). Figure 2 shows the correlation coefficients between typing speed and these variables. It is interesting to note the negative correlation of -0.50 between typing speed and age, and of -0.41 between typing speed and years of work. There were two participants who noted that they now spend more time thinking as they use a keyboard, therefore these negative correlations could be due to a decreased emphasis on completing tasks quickly. There is a rather weak positive correlation between typing speed and keyboard use.

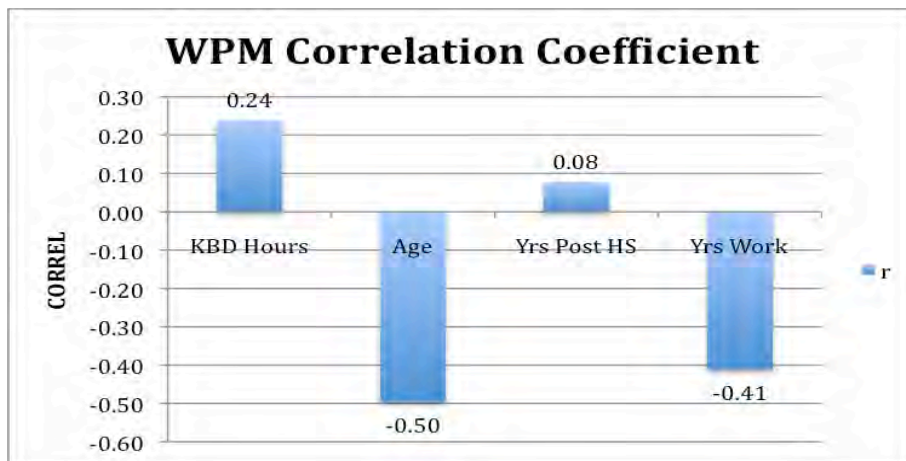


Figure 2

Typing Speed Correlations

### Survey Comments

There were some interesting patterns in the comments. The instant messaging application contributed significantly to some participants improving typing speed, especially



during high school. Most respondents think there is value in teaching touch typing to elementary school students. There is recognition of think time, meaning that composition on a keyboard is a slower process than transcription or communication. Appendix C includes the comments received for various questions in the survey.

### **Conclusions**

The sample size in this research was too small to draw a definitive conclusion about the correlation of typing speed and method. There does not appear to be a correlation between typing speed and method for people who use keyboards on a daily basis. All the participants in this survey are keyboarding at a speed above the 19 wpm minimum composition speed. Instruction in touch typing was not required for some participants to achieve this speed. Many participants recognized that typing instruction could be effective in acquiring this skill quickly. Typing above the minimum composition speed is necessary for people who use a computer on a regular basis, and may contribute to job proficiency. This research and these conclusions should be considered explorative due to the limited sample size. As research in this area is limited, an opportunity for further work in this area exists.

The use of the Survey Monkey website made it possible to include in a widely varied group of people both in age and geographic location. The limited functionality of the free survey tool subscription level required that the survey data be manually entered into a spreadsheet. For future surveys I would recommend purchasing a higher subscription level. Appendix E shows the summary of the survey results as provided in Survey Monkey.

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## Appendix A

### Words Per Minute for Alphanumeric Activities

Words Per Minute (wpm) is a standardized measure of input speed that facilitates comparison of activities including typing, writing, and taking shorthand. A word is standardized to five characters. Shorter words are combined, counting the space as one character. Table A1 shows a comparison of alphanumeric input activities described in the article Words Per Minute (2010).

*Table A1*

#### Recorded Speeds of Alphanumeric Activities

Category	Activity	Speed WPM
Alphanumeric Entry	Average Transcription Rate	33
	Average Composition Rate	19
	Average Professional Typist	50 - 70
	Typist dispatch, time sensitive	80 - 95
	Advanced typist	120
	Memorized text 2 finger hunt and peck	37
	Copying text hunt and peck	27
	Fastest speeds – hunt and peck	60 - 70
	Fastest typing speed	216
Handwriting	Memorized text	31
	Copying text	22
Shorthand	Fasted dictation	282

## Appendix B

### Survey Data Summary

Table B1 contains the survey data by participant ordered by increasing typing speed.

Table B1 Column Definitions:

**WPM** – Words per minute, online typing test speed minus mistakes

**Technique** – Survey choices: touch type, hunt and peck, other. See Table C1 for responses included with the selection “other”.

**KBD Instruction** – Survey choices: never, elementary, middle, high school, or other. See Table C2 for responses included with the selection “other”.

**Instruction Direction** – Survey choices: self directed, teacher directed, or skip if no instruction received. NA – no answer

**More Proficient** – Survey Question: *If you were more proficient at touch typing could you be more successful at work or school?* - Survey choices: not at all, a little, some, a lot. See Table C3 for responses included in “description”.

**Age** – Participants’ age

**Years of work and school** – The sum of years of school (excluding high school) and years of work. The value of work years could not exceed age minus 16 to correct some participant data errors.

**KBD Hours** – Total hours per day spend using a keyboard; this is the sum of the average values in the range choices (home, school, work) on the survey.

Table B1

## Touch Typing Survey Data

<b>WPM</b>	<b>Technique</b>	<b>KBD Inst</b>	<b>Inst Dir</b>	<b>More Prof</b>	<b>Age</b>	<b>Yrs work &amp; school</b>	<b>KBD Hours</b>
20	other	never	NA	a little	56	37	10
23	other	never	NA	a lot	64	46	1
23	other	K-12	teacher	not at all	78	30	3
24	other	K-12	teacher	a little	66	58	7
24	other	never	NA	not at all	55	36	9
24	other	never	NA	a little	60	44	3
26	touch type	K-12	NA	a little	57	34	2
28	touch type	never	NA	a little	50	32	2
30	touch type	K-12	teacher	a lot	65	45	1
32	hunt & peck	never	NA	a little	58	40	3
35	touch type	other	self	some	27	12	19
36	touch type	K-12	teacher	a lot	40	24	4
37	other	K-12	teacher	some	40	19	4
37	other	other	teacher	a little	50	34	4
38	touch type	K-12	teacher	not at all	62	54	1
38	touch type	K-12	self	a little	23	06	8
39	touch type	K-12	teacher	a little	58	36	4
40	touch type	K-12	teacher	some	61	43	1
41	touch type	K-12	teacher	some	59	29	1
41	touch type	K-12	NA	some	54	41	4
42	touch type	K-12	teacher	a little	59	41	7
43	other	other	self	a little	29	15	6
44	touch type	K-12	teacher	a little	59	43	8
44	touch type	K-12	teacher	not at all	67	51	2
45	touch type	K-12	teacher	some	57	39	2
48	touch type	K-12	NA	not at all	55	37	2
50	touch type	K-12	teacher	a little	27	08	6
51	other	never	NA	not at all	25	08	7
52	touch type	K-12	teacher	some	50	18	10
52	touch type	K-12	both	a little	22	04	14
52	touch type	K-12	teacher	a little	26	12	2
52	touch type	other	self	a little	59	49	2
53	touch type	K-12	teacher	a little	69	59	2
55	touch type	K-12	teacher	some	51	12	1
55	touch type	K-12	self	a lot	25	07	2
57	touch type	K-12	teacher	some	39	21	6
58	touch type	never	NA	a lot	26	10	8
58	touch type	K-12	self	not at all	23	10	3
58	touch type	K-12	teacher	not at all	39	21	4

<b>WPM</b>	<b>Technique</b>	<b>KBD Inst</b>	<b>Inst Dir</b>	<b>More Prof</b>	<b>Age</b>	<b>Yrs work &amp; school</b>	<b>KBD Hours</b>
61	other	K-12	teacher	a little	47	29	6
62	touch type	K-12	teacher	not at all	63	48	1
62	hunt & peck	never	NA	a little	39	25	9
63	touch type	K-12	teacher	not at all	25	14	2
64	touch type	K-12	teacher	a little	30	19	11
65	touch type	K-12	self	a little	30	13	20
71	touch type	K-12	teacher	a lot	40	22	10
74	touch type	K-12	self	a little	25	11	8
76	touch type	K-12	teacher	not at all	26	10	11
78	other	K-12	teacher	a little	25	08	6
82	touch type	other	both	some	25	12	15
84	touch type	K-12	teacher	not at all	40	28	2
86	touch type	K-12	teacher	a little	45	26	8
87	touch type	K-12	teacher	not at all	42	23	2
90	touch type	K-12	teacher	a little	61	50	1
103	touch type	K-12	both	not at all	26	13	13

## Appendix C

### Survey Comments

The survey comments are recorded here in 4 tables. Table C1 contains the comments for question 2 on typing technique. Table C2 contains the comments for question 3 on typing instructions. Table C3 contains the comments for question 7, the relationship of typing skill to proficiency at work or school. Table C4 contains comments for question 10, on the value of learning to touch type.

Table C1

*Survey Question 2 Technique, Other - Specify*

<b>Index</b>	<b>Comments – Question 2 Technique</b>
1	Borderline touch typing? Let's call it "Glance typing."
2	wimpy touch typing - I glance at the keyboard for symbols and numbers
3	three fingers left hand and one finger right hand
4	the speed of a snail
5	I have to watch the keyboard
6	8 finger (no pinkies) semi-touch typing
7	A combination of the two, I touch type common words.
8	read and type w/out checking... move fwd
9	six fingers & looking
10	50% touch, 50% hunt an peck
11	combination of the two
12	Glance and toucho

Table C2

*Survey Question 3 Instruction, Other Specify*

<b>Index</b>	<b>Comments – Question 3 Instruction - Other</b>
1	While I had a couple instances of typing instruction in elementary and high school none were effective. I did not learn to touch type effectively until I started using Instand Messenger to talk to my friends.
2	As computer teacher in K - 12 school
3	Dvorak self-taught during College, QWERTY in Middle School
4	Experience, very little instruction during public school.
5	2 weeks in typing class in college, and then I dropped the course because my forearms ached !



Table C3

*Survey Question 7 More Proficient, Description*

<b>Index</b>	<b>Comments – Question 7 More Proficient - Description</b>
1	I spend more of my time thinking than typing now.
2	I think knowledge of touch typing technique is very important. It allows me to type my thoughts without having to think about the actual letters I am typing. It also allows me to not have to look at the keyboard, which makes typing faster.
3	Retired engineer, in retrospect I should have taken typing/keyboard lessons. A significant portion of my job was preparing instructions, procedures, schedules, etc.
4	Would improve my editing typing
5	Between socially communicating and work, I spend less than 5 hours in any given week at my keyboard.
6	I feel that my typing skills are excellent and that they already do help me be successful at school and work.
7	It would help a lot when writing papers and such. I can't quite type as fast as I can think... and that would be a big help.
8	Yes, especially in law school, where students take computerized essay exams lasting anywhere from 2 to 4 hours. Typically professors do not restrict students with any page/word limit, so the students with faster typing speeds have a significant advantage over their peers.
9	I'm happy with my typing speed, but I think learning how to type well is extremely important for any professional or student and it would always be useful to be faster and/or more accurate.
10	Just got a new laptop computer and am having difficulty adjusting to keyboard, especially getting the spacebar to work...it's not as sensitive as my ole computer.
11	I am proficient typer, pretty quick with few errors.
12	I am confident that I am already proficient.
13	most of it is programming, not so much writing prose, much less copying prose. I'm sure if I was able to stream-of-consciousness type something, I would get a somewhat faster score (unless I obsess over words like "consciousness" for too long)
14	I do not retype other people's words. I compose my own and can type much faster. The test does not measure that form of typing.

Table C4

*Survey Question 10 Comments on the value of learning to touch type*

<b>Index</b>	<b>Comments – Question 10 – Value of learning touch typing</b>
1	I think it is important to learn touch typing, and think it should be taught as early as a child has the manual dexterity and cognitive ability to learn.
2	I was caught in the evolution of secretarial duties due to the introduction of the PC into the workplace. Therefore I had to learn to type my own work. I would hve been more productive had I taken the time to learn to touch type.
3	I love touch typing, and I am amazed I went years w/o using it and still knew it.
4	I'm a typing klutz.
5	The touch typing class I took as a sophomore in high school was one of my most valuable, and practical, education courses.
6	I think that learning how to properly touch type is an important thing that students should be learning as early as elementary school. Basic computer skills, such as typing are beneficial to everyone, especially in today's world which is surrounded by the use of technology. It is so much easier being able to type with a very high accuracy and speed without having to look at the keyboard. I wouldn't have learned how to type the way I do without having computer class in the 7th grade.
7	really think that allowing students to use instant messenger will really motivate them and allow them to have fun while typing. You could force them to use a messenger that will only allow them to send error-free and grammatically correct text... which would force them to work on their skills on a number of fronts while allowing them to communicate and have fun. :)
8	Touch typing makes life easier. It made me a more productive worker and, in turn, a better paid worker!
9	Did Medical Transcription at home when my children were young. That faster I could type, the more money I made. When I watch my husband hunt and peck, he is an engineer at Chrysler Corp) it makes me cringe. He would be so much more productive with good typing skills.
10	My modus operandi is to think while typing. It is slow with endless changes, but has served me well. My sister was very good at touch typing. She typed scientific papers for me without the vaguest notion of what the words meant.
11	I know I could do better if I practiced more
12	During one summer when I was in high school my dad told me he would give me \$100 if I learned to type at 60 wpm with 90% accuracy. He got me a software program to learn with and let me learn at my own pace. It was one of the best things I could have done with that summer and one of the most useful skills I ever learned. I think it's an extremely important skill to learn.
13	Dvorak rocks.

<b>Index</b>	<b>Comments – Question 10 – Value of learning touch typing</b>
14	I think it is important for today's students to learn to type properly and proficiently. It's easy to become dependent on our word processors to autocorrect our errors but they are not perfect.
15	There is a difference between learning on a typewriter vs a keyboard: accuracy was stressed over speed.
16	speed depends on the keyboard used. My absolute fastest and best typing ever was on an IBM 026 Key punch keyboard. I believe I could do over 100 wpm at my peak.
17	The value is great, but frustration comes from the QWERTY keyboard being introduced in primary school grades without any corresponding instruction in touch typing.
18	Touch typing is an invaluable skill! Hunt and peck is dirty habit!
19	i dont touch type.... I read then just type. My technique Read Type
20	My shakespeare test was a lower 67 wpm with 4 mistakes. A simpler paragraph with less olde english misspellings of words helped my score and accuracy. Again, though, I'm not a receptionist visually copying down something that someone else wrote, I'm a programmer thinking through every line of code. Most of my skill has probably actually come from typing on Instant Messenger clients.
21	As a school yearbook sponsor, I could always amaze my middle school age students with touch typing. Not much else amazed them.

## Appendix D

### Chi Square Calculations

Table D1 shows the actual and expected values for calculating the chi-square probability using the Excel Formula CHITEST. In this calculation the typing techniques “hunt and peck” and “other” were considered separate techniques.

Table D1

#### *Chi Square Calculation - WPM x Technique*

<b>Actual</b>	<b>Touch Type</b>	<b>Hunt &amp; Peck</b>	<b>Other</b>	<b>Total</b>
20-29	2	0	6	8
30-39	6	1	2	9
40-49	8	0	1	9
50-59	12	0	1	13
60-69	4	1	1	6
70-79	3	0	1	4
80-89	4	0	0	4
90-99	1	0	0	1
100-109	1	0	0	1
<b>Total</b>	41	2	12	55

<b>Expected</b>	<b>Touch Type</b>	<b>Hunt &amp; Peck</b>	<b>Other</b>
20-29	5.96	0.29	1.75
30-39	6.71	0.33	1.96
40-49	6.71	0.33	1.96
50-59	9.69	0.47	2.84
60-69	4.47	0.22	1.31
70-79	2.98	0.15	0.87
80-89	2.98	0.15	0.87
90-99	0.75	0.04	0.22
100-109	0.75	0.04	0.22
chisq	0.11		

To validate the spreadsheet calculation, the same data was input to the website

<http://www.physics.csbs> which yielded approximately the same results with more detail.

- chi-square = 23.2
- degrees of freedom = 16
- probability = 0.110

Combing the typing techniques “hunt and peck” and “other”, then using the same methods to calculate the chi-square probability yielded the results shown in Table D2.

Table D2

*Chi Square Calculation – WPM x Technique (“Othe”r combined with “Hunt and Peck”)*

<b>Actual</b>	<b>Touch Type</b>	<b>HP+Other</b>	<b>Total</b>
20-29	2	6	8
30-39	6	3	9
40-49	8	1	9
50-59	12	1	13
60-69	4	2	6
70-79	3	1	4
80-89	4	0	4
90-99	1	0	1
100-109	1	0	1
<b>Total</b>	41	14	55

<b>Expected</b>	<b>Touch Type</b>	<b>HP+Other</b>
20-29	5.96	2.04
30-39	6.71	2.29
40-49	6.71	2.29
50-59	9.69	3.31
60-69	4.47	1.53
70-79	2.98	1.02
80-89	2.98	1.02
90-99	0.75	0.25
100-109	0.75	0.25

chisq	0.042002158
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Running the same calculation using the website: <http://www.physics.csbs> yielded approximately the same results.

- $\chi^2 = 16.0$
- degrees of freedom = 8
- probability = 0.042

## Appendix E

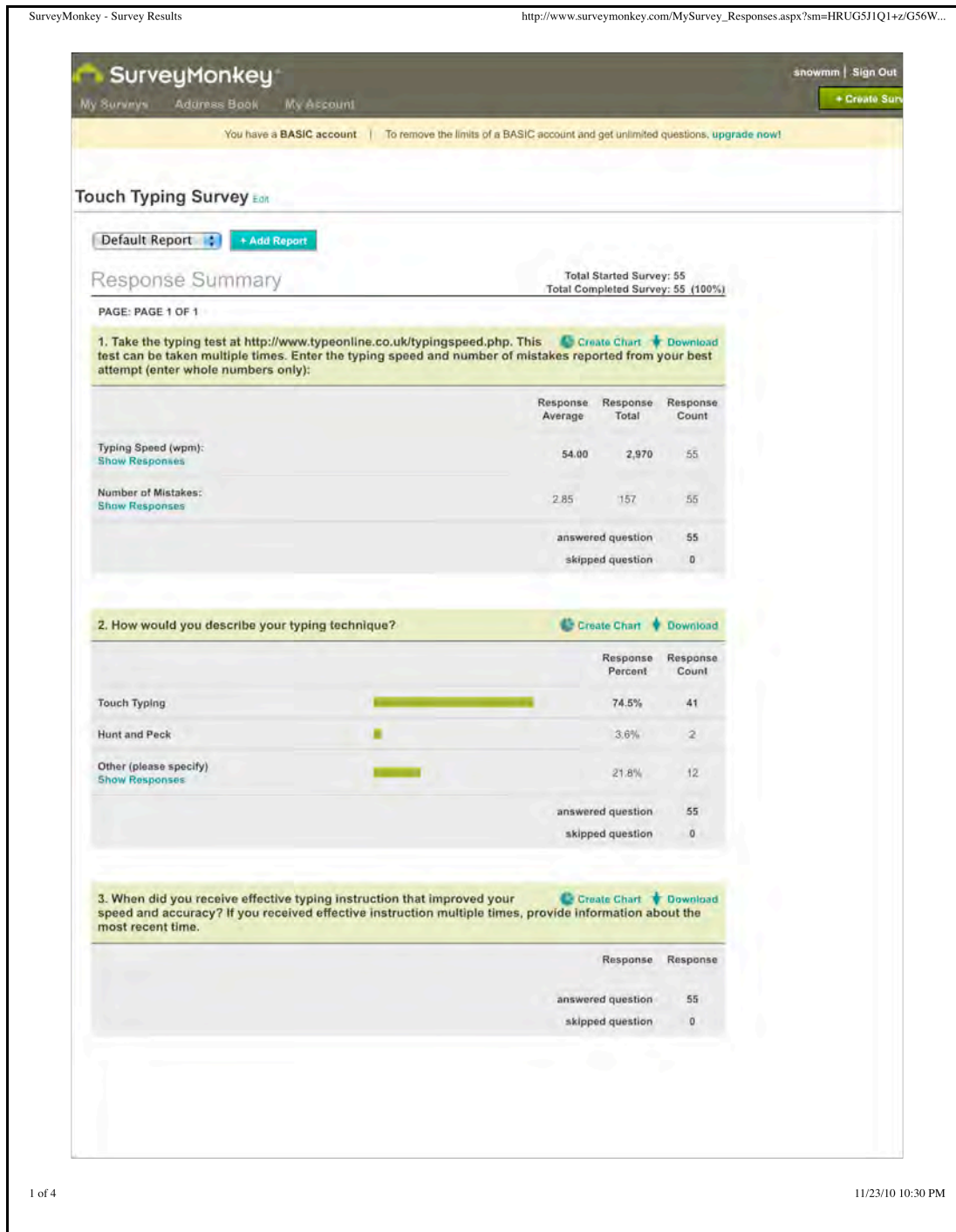
Survey Summary as provided by <http://www.surveymonkey.com>

Figure E1

Touch Typing Survey Response Summary Page 1 of 4

12/1/2010

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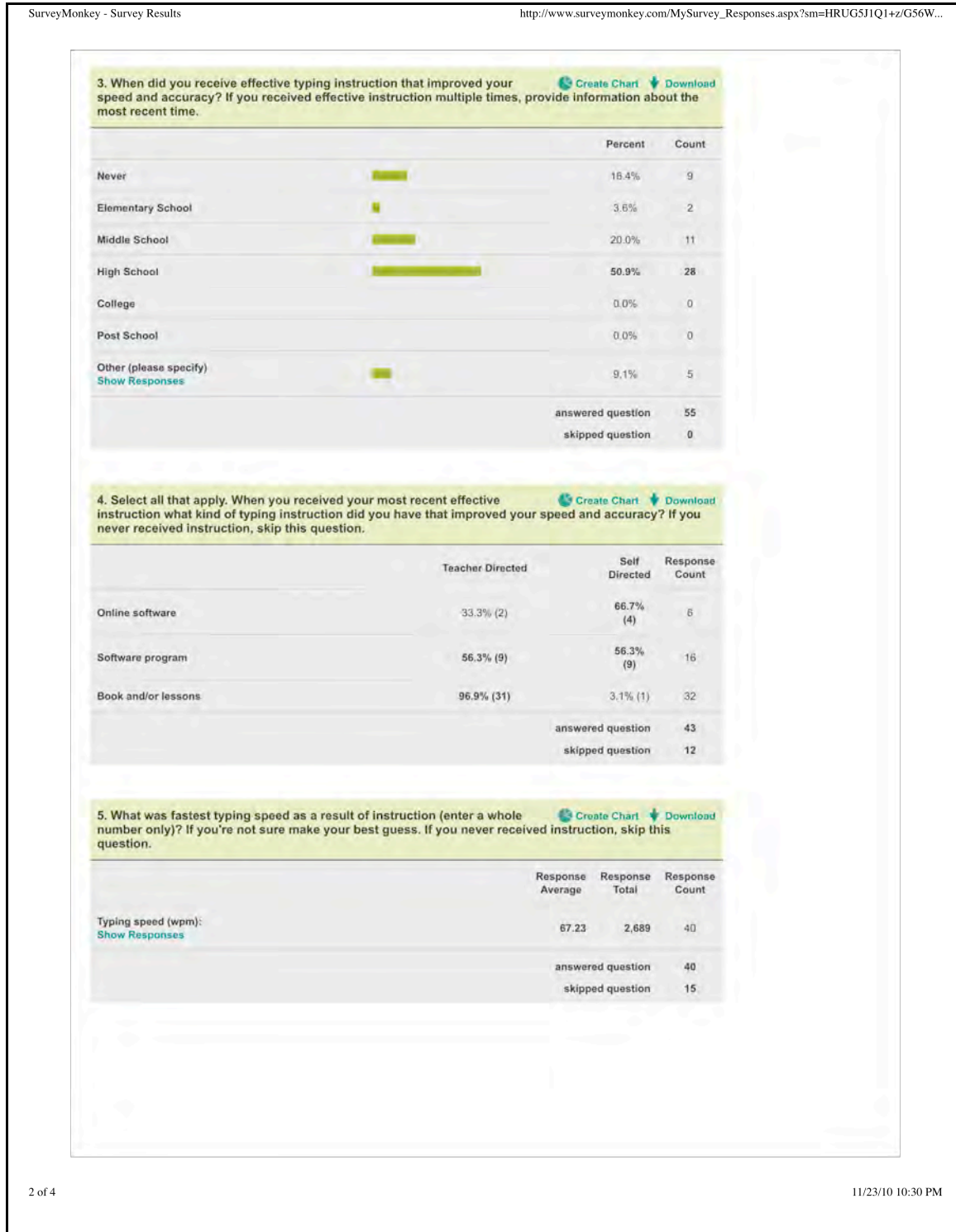


Figure 3

Touch Typing Survey Response Summary Page 2 of 4

12/1/2010

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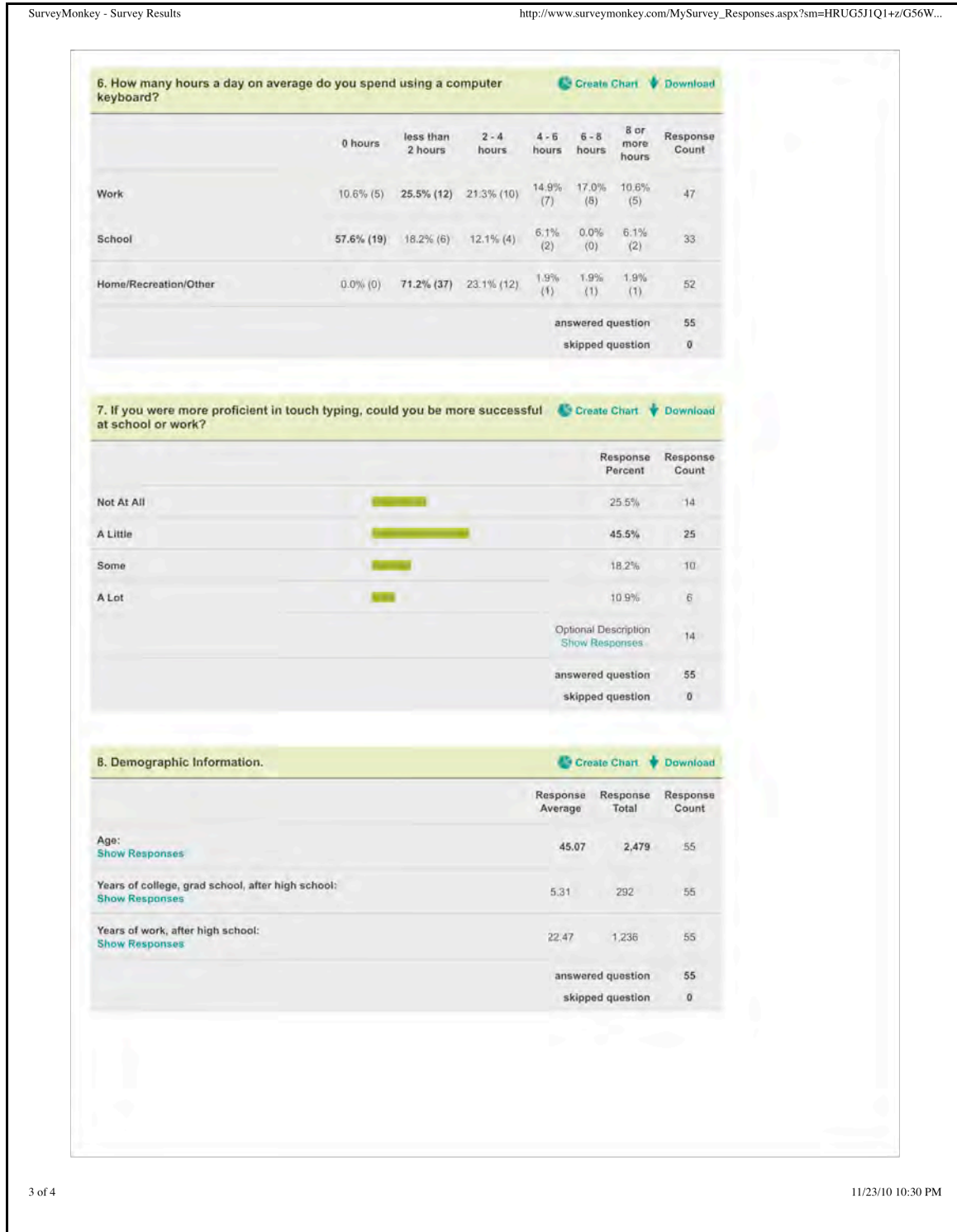


Figure 4

Touch Typing Survey Response Summary Page 3 of 4

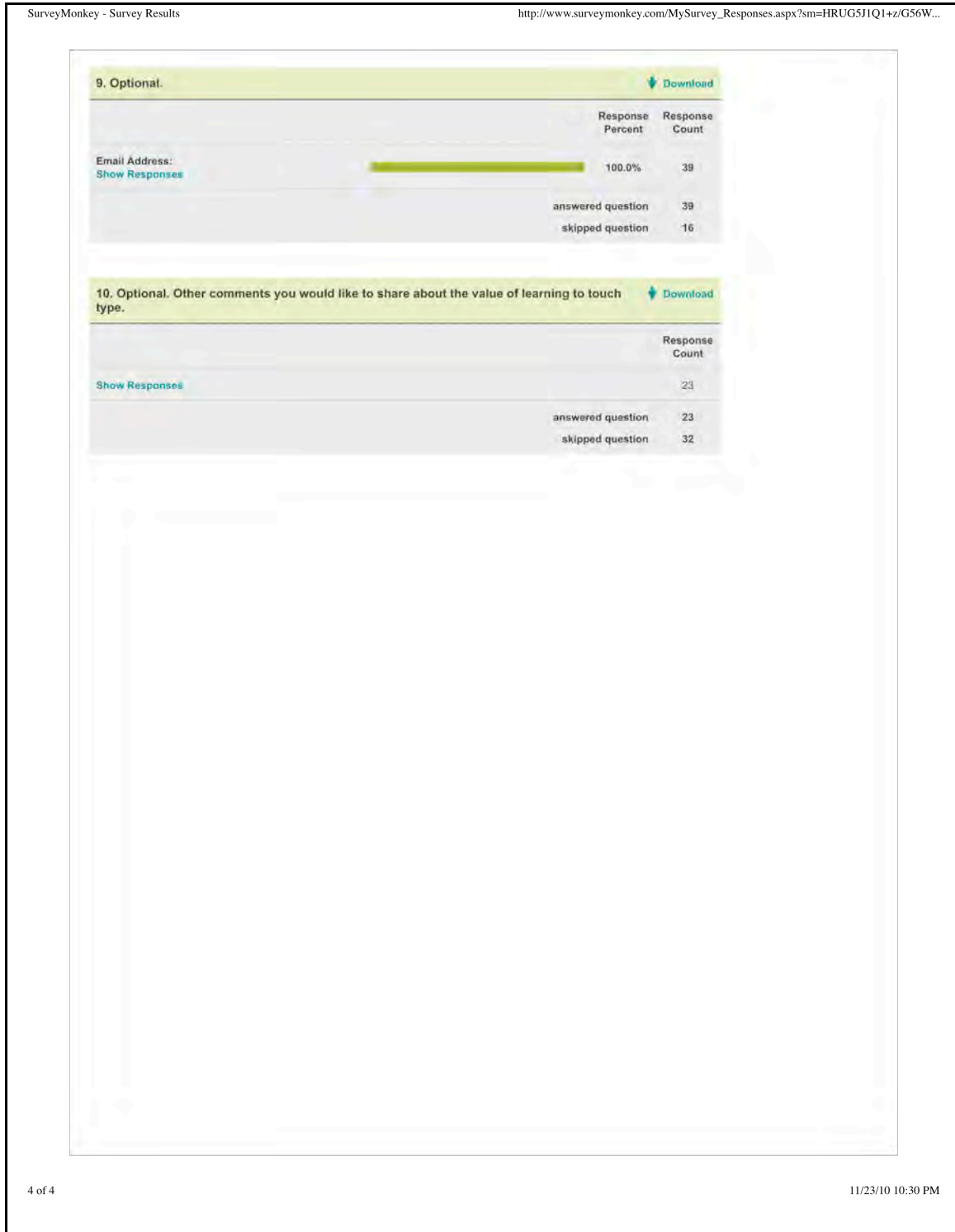


Figure 5

Touch Typing Survey Response Summary Page 4 of 4

12/1/2010

1