The Comparison of Typed and Handwritten Essays of Iranian EFL Students in terms of Length, Spelling, and Grammar

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Abstract

This study attempted to compare typed and handwritten essays of Iranian EFL students in terms of length, spelling, and grammar. To administer the study, the researchers utilized Alice Touch Typing Tutor software to select 15 upper intermediate students with higher ability to write two essays: one typed and the other handwritten. The students were both males and females between the ages of 22 to 35. The analyses of the students' scores in the three mentioned criteria through three paired samples t-tests indicate that typed essays are significantly better than handwritten ones in terms of length of texts and grammatical mistakes, but not significantly different in spelling mistakes. Positive effects of typing can provide a logical reason for students, especially TOEFL applicants, to spend more time on acquiring typing skill and also for teachers to encourage their students with higher typing ability to choose typed format in their essays.

Keywords: typed, handwritten, spelling mistakes, grammatical mistakes, length of text

Introduction

Improving the students' writing ability, as one of the essential skills in learning every language, has always been an important obsession for many teachers, and, therefore, many different methods have been proposed. As it is generally believed, writing is a demanding task, and improving writing might be time-consuming and difficult for many students. On the one hand, with the advancement of information technology and the excessive use of language through computer and, especially internet, students do most of their assignments and writing activities using the computer. On the other hand, for a long time, students have used paper and pencil for writing, and most of them have never had higher typing skill. Therefore, many researchers have attempted to investigate the effect of typing on writing performance.

The use of typed instead of handwritten texts is increasing in contemporary life, and many people, even children, prefer to write via keyboard more and more in their daily activities. A research by Mangen and Velay (2010) demonstrated that nowadays, children may get the first everyday writing experiences by typing on a computer or mobile phone much before they master handwriting. Another study among German teachers indicated that during the last years, sensory-motor skills, which are a requirement for handwriting, have been deteriorated among young children entering elementary school due to the excessive use of typing (Deutscher & Lehrerverband, 2015). Therefore, many researchers attempt to investigate how this dramatic change in writing habits in the digital age affects writing.

Although few studies have demonstrated the superiority of handwriting over typing, many studies indicated the positive impact of typing. For instance, a study by Cunningham and Stanovich (1990) indicated a superiority of handwriting over typing on spelling performance. However, this effect was not replicated in two other studies (Ouellette &Tims, 2014; Vaughn, Schumm, & Gordon, 1992). The research by Rodrigues (1985) indicated that word processor encourages students to read their own writing more and have more in-depth and surface-level revision. Another study by McAllister and Louth (1988) demonstrated that the use of word processor increases the students' pleasure and pride in their writing. Bangert-Drowns (1993) investigated the effects of word processing on L1 writing. The research demonstrated that word processor creates an opportunity to manipulate the texts to produce high quality printed documents. Moreover, the research concluded that word processors may let students have higher order decisions. Based on the results of a research by Warschauer and Healey, (1998), word processor decreases the students' fear of spelling error and helps them to produce essays with fewer spelling errors.

Schwarts, Fitzpatrick and Huot (1994) concluded that texts produced by word processors were both longer and richer. Li (2005), focusing on the process of writing, concluded that the number of revision was significantly higher for computer-processed responses than for handwritten responses. Susser (1994) similarly concluded that the writing process in typing is useful for students' writing. In other words, people learn how to write when they pre-write, edit, and revise their writing.

Although L2 students have many common characteristics with L1 students and the advantages of typing on L1 environment can be applied to L2 situation, some other functions of word processor such as spell checking and grammar checking are more significant for L2 students. Warschauer and Healey (1998) observed that L2 writers find their spelling errors easily and correct them based on the list of options. Moreover, their fear of making spelling errors might be eased. Pennington (1996) found that through the use of keyboard and having word processing ability, L2 writers write freely and improve their attitudes towards writing in the second language.

In a research conducted in ESL context by Lee (2004), the students mentioned that computer-based writing medium as a placement test places them into the correct ESL class because they feel convenient with typing and are able to produce more legible text. One decisive factor in fruitful use of word processing instead of handwriting is typing skill which was considered by Mogeyet. al. (2010). Mogeyet. al. (2010) compared typing and handwriting for essay examinations at university. In this study, the researchers let the students choose the medium for their writing. There was no significant difference in the results due to the format of written texts. In other words, they concluded that it is better to let the students choose the medium because they believed that differences in the students' scores are due to their proficiency not the specific writing medium.

Another affecting variable was language proficiency, which was included by Lessien (2013) in his study. He investigated the effects of typed versus handwritten essays on students' scores on proficiency tests. The researcher found that there is a significant difference between the scores of intermediate and advanced students. Moreover, Lessien concluded that, in typed condition, the advanced students' scores were much greater than intermediate ones in comparison to the handwritten condition.

Khishdari (2014) investigated the effect of word-processors on the spelling errors and the difference between the number of typing and handwriting spelling mistakes of students. Although the researcher concluded that handwriting is significantly better than typing regarding students' spelling mistakes, the results might be due to the kind of participants selected for the

study, because the researcher did not pay attention to the typing skill of the participants before administering the spelling test. Therefore, the students' better performance in the handwritten formant might be due to their lack of skill in typing.

Although numerous studies support positive impacts of typing on different components of writing, enough attention has not been paid to the typing skills, except for Khishdari (2014). Furthermore, few studies have been conducted on the effect of typing on EFL students' writing performance in EFL contexts. Moreover, most of Iranian EFL students do not have enough typing skill and prefer to do most of their activities by handwriting. The lack of typing skill is certainly problematic for them, especially those who are at higher level of language ability and want to use language for different purposes such as sending emails, online chatting, and even having internet based exams such as TOEFL iBT. Additionally, most students use pen and paper in wiring more in their academic career and do not feel urgent need to type. Therefore, a study is needed to investigate whether typing skill affects the EFL students' writing ability in terms of length, spelling, and grammar or not. Thus, length of text, spelling mistakes, and grammatical mistakes, as three important components of every essay, were selected to be compared in handwritten and typed essays of those EFL students who have higher typing skill to see whether there was a significant difference among these two writing mediums in terms of length, spelling mistakes, and grammatical mistakes or not? This is what sets this study apart from all the rest, and this is where the primary contribution of this study to the field lies. Therefore, the following research questions were formulated to serve the purpose of this study:

1. Is there any significant difference in the length of handwritten and typed essays of Iranian EFL students?
2. Is there any significant difference in the number of spelling mistakes of handwritten and typed essays of Iranian EFL students?
3. Is there any significant difference in the number of grammatical mistakes of handwritten and typed essays of Iranian EFL students?

Method

Participants

To administer the research, 15 EFL students were needed to participate. Therefore, the researcher asked his own students who were preparing for TOEFL tests in different classes to voluntarily take a typing test, and 15 students who obtained higher scores in the typing test were selected to

participate in the study. It is important to mention that they were between the ages of 22 to 35, including male and female students. Moreover, it is important to mention that they were at upper intermediate level and had already written several essays in English language.

Instrumentation

The most important instrument of the present research was typing software entitled Alice Touch Typing Tutor, produced by Cans Lab Software (http://www.softrayane.ir/entry/9070). It was used to measure the students' typing ability. Also, computers for typing essays were available for the participants.

Procedure

In order to administer the research, the researcher selected different topics from among TOEFL essay topics from different books like Barrons TOEFL iBT book (Appendix). Each student wrote two essays: one in typed and one in handwritten format. The topics were different for typed and handwritten essays in order to prevent practice effect. Moreover, since students were doing the process as part of their preparation for the TOEFL exam, and most of them had already written several articles, it was not possible to find topics which had not been written by all the participants, which is one of the limitations of the study. Therefore, the researcher selected 30 topics and randomly asked students to write about them. They were asked to complete both tasks in 30 minutes like TOEFL independent essays. Moreover, they were asked to spend 25 minutes for writing and 5 minutes for editing their essays. For the handwritten essays, extra pieces of paper were also given to the students to use them as a first draft in case of need.

In the next stage, the students' essays were analyzed in terms of spelling mistakes, grammatical mistakes and the length of texts, and every essay, either handwritten or typed, was received three scores. To obtain the first score, the amount of words in every essay was counted. And for the second score, the students' spelling mistakes were divided to the amount of words in each essay. For the third score, two professional teachers were asked to read the papers, both handwritten and typed ones, and underline three important grammatical mistakes of third person singular s, plural s and subject verb agreement. Then, the number of grammatical mistakes on the whole were counted in each essay and divided to the number of words in each essay. Although these grammatical mistakes were easy to find and it did not seem to be any significance difference in the raters' judgments about the mistakes, the inter rater reliability of Kappa was also calculated which was 0.87.

Design

A quantitative method was used in the present research. There were two variables: The independent variable with two levels of typing and handwriting and the dependent variable with three levels of length of text, spelling and grammatical mistakes.

Results

At first, Kolmonorov-Smirnow test of normality was administered to all the scores in the research in order to observe whether the data are normally distributed to be used in parametric statistics (paired sample t-test) or not. Table 1 demonstrates the results of the normality test.

Table 1
Kolmonorov-Smirnow test of normality for all the scores

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
numberofwords1	.157	15	.200[*]	.934	15	.308
scoresforgrammaticalmistakes1	.109	15	.200[*]	.958	15	.666
scoresforspellingmistakes1	.113	15	.200[*]	.971	15	.878
numberofwords2	.168	15	.200[*]	.946	15	.458
scoresforgrammaticalmistakes2	.100	15	.200[*]	.960	15	.701
scoresforspellingmistakes2	.137	15	.200[*]	.966	15	.790

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Since the significant value for all the data is 0.20 which is more than Alfa level (0.05), it indicates that the distributions of scores for all the variables are normal.

After collecting data for the first research question, one score was assigned for each student. Table 2 refers to descriptive statistics for the number of words in the typed and handwritten essays.

Table 2
Descriptive statistics for the number of words in typed and handwritten essays

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Word number typed	404.0000	15	55.20223	14.25315
	Word number handwritten	326.7333	15	58.52285	15.11053

Table 3 displays the result of the paired samples t-test which was employed to evaluate the differences between the number of words in the handwritten and typed essays.

Table 3
Paired Samples t-test for the number of words in typed and handwritten essays

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Word number typed Word number handwritten	77.26667	26.20378	6.76579	62.75550	91.77784	11.420	14	.000

As Table 3 indicates, there was a statistically significant difference in the number of words in the handwritten essay (M=326.73, SD=58.52) and typed one (M=404.00, SD=55.20); t (14) =11.42, p=0.00. The mean increase in the typed essays was 77.26 with a 95% confidence interval ranging from 62.75 to 91.77. Therefore, the first null hypothesis, that is, there is no significant difference in the length of handwritten and typed essays of Iranian EFL students, was rejected and the alternative hypothesis, that is, there is a significant difference in the length of handwritten and typed essays of Iranian EFL students, was supported.

For testing the second null hypothesis, that is, there is no significant difference in the number of spelling mistakes of the handwritten and typed essays of Iranian EFL students, the descriptive statistics referring to the number of spelling mistakes in the typed and handwritten essays are presented in Table 4.

Table 4
Descriptive statistics for the number of spelling mistakes in typed and handwritten essays

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Spelling mistakes handwritten	1.7847	15	.47683	.12312
	Spelling mistakes typed	1.6853	15	.50881	.13137

In order to compare the number of spelling mistakes on the students' handwritten and typed
essays, a paired sample t-test was run. The results are demonstrated in Table 5.

Table 5
Paired Samples Test for the number of spelling mistakes in the typed and handwritten essays

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Spelling mistakes handwritten spelling mistakes typed	.09933	.41446	.10701	-.13019	.32885	.928	14	.369

The results displayed in Table 5 indicate that there was no statistically significant difference between the number of spelling mistakes in the handwritten essay (M=1.78, SD=0.47) and the typed one (M=1.68, SD=0.50); t (14) =0.928, p=0.369. Therefore, the second null hypothesis was not rejected.

And finally to test the last null hypothesis, that is, there is no significant difference in the number of grammatical mistakes of the handwritten and typed essays of Iranian EFL students, another analysis of paired sample t-test was conducted to compare the number of grammatical mistakes on the students' handwritten and typed essays. The descriptive statistics are demonstrated in Table 6.

Table 6
Paired Samples Test Statistics for the number of grammatical mistakes in typed and handwritten essays

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Grammatical mistakes handwritten	1.6033	15	.43094	.11127
	Grammatical mistakes typed	.8440	15	.38750	.10005

Table 7 displays the results of the paired samples t-test statistical analysis.

Table 7
Paired Samples Test for the number of grammatical mistakes in typed and handwritten essays

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Grammatical mistakes handwritten grammatical mistakes typed	.75933	.38973	.10063	.54351	.97516	7.546	14	.000

The results in Table 7 clearly demonstrate that there was a statistically significant difference in the number of grammatical mistakes in the handwritten essays (M=1.60, SD=0.43) and typed ones (M=0.84, SD=0.38); t (14) =7.546, p=0.00. The mean increase in the typed essays was 0.75 with a 95% confidence interval ranging from 0.54 to 0.97. Therefore, the last null hypothesis was rejected and the alternative hypothesis, that is, there is a significant difference in the amount of grammatical mistakes of handwritten and typed essays of Iranian EFL students, was supported.

Discussion

The first finding of the present research is that the students with higher typing ability can write more words in typed format in comparison to handwritten ones. This is in line with the research done by Schwartz, Fitzpatrick and Huot (1994) who concluded that texts produced by word processors were both longer and richer.

The second finding is that although the students had more spelling mistakes in typed format in comparison to handwritten ones, these differences were not significant. In other words, although students had slightly more mistakes in their typed essays, since they wrote more words, their mistakes were negligible. These results are incompatible with the results of the research by Khishdari (2014) who concluded that handwriting is significantly better than typing regarding the students' spelling mistakes. The differences might be due to the fact that in this research the participants' typing ability was not tested before the research and their better performance in the handwritten format might be due to their lack of ability in typing. However, the results are not supported by Warschauer and Healey, (1998) who concluded that word processor helps students to produce essays with fewer spelling errors. The findings are not supported by Warschauer and Healey (1998) either who indicated that L2 writers find their spelling errors easily and correct them based on the list of options. As it is clear in both studies, the students were able to use word processor to check their spelling mistakes, which were not allowed in the present research.

Finally, the students' grammatical mistakes were significantly lower in the typed essays. This finding is in line with the results of the research by Rodrigues (1985) who indicated that word processor encourages students to read their own writing more and have more in-depth and surface-level revision. Also, it is supported by Banger-Drowns (1993) who concluded that word processor creates an opportunity to manipulate the texts to produce high quality printed documents. These differences might be due to the fact that students could edit their own writing in typed format better than handwritten one. A study by Li (2005) also concluded that the number of revision was significantly higher for computer-processed responses than for handwritten responses. However, another study is needed to compare the students' writing in both formats before and after editing in order to see whether these differences are due to the editing or some other factors.

Generally speaking, the results of the research demonstrate that typing ability increases the students' writing speed and decreases their grammatical mistakes. Considering the beneficial effect of typing format, these findings are

supported by Susser (1994) who found that going through writing process is useful for students' writing, and people learn how to write when they pre-write, edit, and revise the writing.

In the light of these studies it can be concluded that positive effects of typing can motivate students to practice typing to obtain better results in their educational process. Moreover, the results provide a logical reason to encourage students who want to participate in TOEFL exam to spend more time to have higher typing skill and receive better results in TOEFL exam. Regarding the higher speed of typing and lower amount of grammatical mistakes, and by having access to the spell checking capability of word processor, the students who type will certainly create more accurate and longer texts in a short time in comparison to the ones who write with pen and paper.

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Appendix

Essay Topics:
1. Do you agree or disagree with the following statement? Life today is easier and more comfortable than it was when your grandparents were children. Use specific reasons and examples to support your answer.
2. Do you agree or disagree with the following statement? Television advertising directed toward young children (aged two to five) should not be allowed. Use specific reasons and examples to support your answer.

3. Do you agree this statement? It is more important to keep your old friends than make new friends.

4. Do you agree or disagree with the following statement? Only people who earn a lot of money are successful. Use specific reasons and examples to support your answer.

5. Do you agree or disagree with the following statement? It is more important for students to understand ideas and concepts than it is for them to learn facts. Use specific reasons and examples to support your answer.

6. It is better to have broad knowledge of many academic subjects than to specialize in one specific subject.

7. We learn through direct experience; to accept a theory without experiencing it is to learn nothing at all.

8. The way people look, dress, and act reveals their attitudes and interests. You can tell much about a society's ideas and values by observing the appearance and behavior of its people.

9. Do you agree or disagree with the following statement? Parents are the best teachers. Use specific reasons and examples to support your answer.

10. Do you agree or disagree that progess is always good? Use specific reasons and examples to support your answer.

11. Do you agree or disagree with the following statement? Parents are the best teachers. Use specific reason and example to support your answer.

12. Some people believe that the Earth is being harmed (damaged) by human activity. Others feel that human activity makes earth a better place to live. What is your opinion? Use specific reasons and examples to support your answer.

13. In order to become financially responsible adults, children should learn to manage their own money at a young age.

14. In order to be well-informed, a person must get information from many different news sources.

15. The best way to travel is in a group led by a tour guide. Do you agree or disagree with this statement? It is more important to keep your old friends than it is to make new friends.

16. 1. Do you agree or disagree with this statement? It is more important to keep your old friends than it is to make new friends.

17. Why do you think some people are attracted to dangerous sports or other dangerous activities? Use specific reasons and examples to support your answer.

18. Do you agree or disagree with the following statement? People benefit more from traveling in their own country than from traveling to foreign countries. Use specific reasons and examples to support your answer.

19. Do you agree or disagree with the following statement? People are never satisfied with what they have; they always want something more or something different. Use specific reasons to support your answer.

20. Do you agree or disagree with the following statement? Television has destroyed communication among friends and family. Use specific reasons and examples to support your opinion.

21. It has been said, "Not everything that is learned is contained in books." Compare and contrast knowledge gained from experience with knowledge gained from books. In your opinion, which source is important? Why?

22. Films can tell us a lot about the country where they were made. What have learned about a country from watching its movies? Use specific examples and details to support your response.

23. What are the factors that lead to living a longer life?

24. Why do people keep pets?

25. Why are planning to study abroad. What do you think you will like and dislike about this experience? Why? Use specific reasons and details to support your answer.

26. It is better for children to grow up in the countryside than in a big city. Do you agree or disagree? Use specific reasons and examples to develop your essay.

27. Some people think that automobile has improved modern life. Others think that the automobile has caused serious problem. What is your opinion?

28. Is it more important to be able to work with a group of people on a team or to work independent?

29. Do you agree or disagree with the following statement? Children should begin learning a foreign language as soon as they start school.

30. Is it more important to be able to work with a group of people on a team or to work independent?

Biodata

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