The Effect of Spell-Checker Features on Spelling Competence among EFL Learners: An Empirical Study

Hewa Fouad Ali[1] & Lisa Jamal Nakshbandi[2] & Fatima Saadi[3] &Sami Hussein Hakeem Barzani[4]

[1,3&4]English Language Teaching Department, Faculty of Education, Tishk International University, Erbil, Iraq
[2]Independent Researcher, Erbil, Iraq
Correspondence: Hewa Fouad Ali, Tishk International University, Erbil, Iraq
Email: hiwa.fuad@tiu.edu.iq

Abstract: Writing is an essential skill in any languages. There are several sub-skills involved in writing, the most important one is spelling. Spelling is regarded as one of the most challenging aspects of writing as it requires learners to acquire a range of detailed knowledge including writing system, orthography, and punctuation. With the wide spread of technology use in almost all aspects of our lives, learning and teaching processes are not exceptional from this storm that ultimately affects the way language learning and teaching are maintained. In this line, the current study intended to examine the effects of using technological tools that are featured with auto-spell checker on the spelling abilities of learners. To do so, a quasi-experimental method was carried out to address the issue under investigation. The collected data were analyzed using SPSS and GraphPad Prism. The findings exhibited the influence of such technological tools on spelling competence of the learners in which those who heavily depend on such technological tools face more challenges pertaining spelling in their writing tasks.

Keywords: Writing Skill, Spelling, Technology, EFL Learners

1. Background Information

Spelling has been considered one of the important components of language. Among most educators and the public, spelling retains its traditional definition as "the knowledge and application of the conventional written representation of words in the process of writing, and the instruction necessary to develop this knowledge" (Tempeton, 1991, p.197). People learn a language in order to communicate with one another. Communication can be in the form of either written or spoken language. A person who wants to communicate through writing needs to have the appropriate content as well as correct forms of words in order to write effectively. Spelling is crucial for a number of reasons. Reading and spelling skills are interwind and help develop general literacy skills. Staden (2010) stated that "spelling is a complex written language skill, which requires a learner to possess a number of language abilities, including phonological, morphological, visual memory skills, semantic relationships as well as adequate knowledge of spelling rules".

Spelling is also an important part in ELL writing, especially since writing is frequently used in learning process such as exams, writing tasks, text messages on cellphone and social media. Therefore, a student needs to have good spelling skills in order to convey the written message without distraction. In today's society, people, particularly students, seem to rely too much on spelling correction tools such as autocorrect and spellchecker that immediately correct their misspelled words. This phenomenon brings many investigative aspects to the area.

1.2 Problem Statement

With the advent of technology, writing devices are now equipped with auto-correction features that automatically corrects or generates a list of potential words to the author. This has made the task apparently easier. However, based on the cognitive load theory, when there is not enough effort and time given to complete a learning task, the chances to learn effectively reduce (Lin et al., 2017). Although the effects of these convenient features are not obvious in terms of spelling competence due to the fact that there is little research conducted on the matter. Furthermore, students of English as a foreign language often find spelling as one of the challenging aspects of writing especially when conducting an exam due the fact that they often do not have access to the autocorrection features as they are used to use when completing assignments required. Moreover, according to Peter Westwood (2018) learners are not explicitly taught how to spell. There are teachers who do not even consider teaching the skill at all. On the other hand, there are some teaching spellings through homework and assignments that is also not regarded substantial. Having taken the aforementioned reasons and challenges into account, the primary aim of the present research is to investigate the effects of autocorrection features on spelling competence among EFL learners.

1.3 Research Questions

- To what extent do auto-correction/spellchecker features affect spelling competence?
- To what extent does handwriting tasks improve spelling?
- What is the most common type of misspelling made by EFL learners?

1.4 Aim of the Research

The primary goal of this research is to examine the impact of autocorrection features on the spelling proficiency of students of EFL learners and to review and study literature on the concept of using technological features in writing.

1.5 Scope of the Study

This study focuses on finding out the primary factors that affect students' spelling competency, as well as the effect of auto-correction and spellcheckers on the spelling of EFL learners. The data collection will be conducted to EFL students at a private university in Iraq.

1.6 The Study Significance

Teaching spelling to English learners is a necessity because it allows them to communicate and write more efficiently and concisely. Moreover, learning how to spell has the advantage of being easily understood and expressed correctly. However, it appears that in today's society, the use of auto-correction and spellcheckers is increasing and becoming more common, and as a result, students spelling and writing skills are beginning to decline. The goal of this study project is to demonstrate the influence of auto-correction and spellcheckers on EFL students' spelling. This research will be beneficial for teachers and curriculum designers because they will be able to understand the effect of autocorrection features on EFL learners spelling and act accordingly. Students will also benefit from this research because they will be aware of the negative impact of auto-correction. Despite what is mentioned, the research is going to add more value to the body of literature through filling a gap in what has been studied. It is also going to give a theoretical background knowledge to researcher who are interested in the area.

2. Literature Review

2.1 Introduction

Language is the most important source of communication. It is a way for individuals to share and exchange their thoughts, feelings, emotions, and ideas. There are a number of languages which are being spoken all across the world; however, among all the languages, one language is considered to be dominant all over the world. The language which is being referred to is the English language, which is the most common and widely spoken language throughout the world. The English language is an extremely useful language to learn; it has been playing a significant role in a variety of fields, such as medicine, engineering, and education, etc.

Primarily, there are four main skills in any language that include reading, listening, speaking and writing. Writing is considered one of the most complex and challenging skills for students to learn because it includes several subcategories such as writing system, orthography, spelling, and punctuation, all of which pose difficulties for students. Although writing is considered difficult, it is also one of the most important skills that students must master due to the fact that students are assigned to complete many tasks and do many exams. In written communication, correct grammar, punctuation, and spelling are extremely important. Spelling is one of the most important aspects of good writing. Different authors have defined spelling in different ways. For instance, spelling is defined as the act of forming words correctly from individual letters. In written language, spelling is the forming of words from letter according to accepted usage. Accurate spelling is essential for conveying messages effectively (Hornby, 2000). The following section sheds light on what the concept of spelling as well as a range of required knowledge in spelling.

2.2 Spelling Skill

Spelling is one of the basic foundations for Learning English language. Spelling, according to Okyere (1990), is a necessary skill for mastering a language because it allows for the clear expression of thought and ideas in any written text. Spelling like all aspects of the English language is about conveying messages (Stirling, 2011). Moreover, Westwood (2005) also states that spelling is crucial for communication purposes.

There are a number of knowledge ranges in spelling that a learner should master as listed below:

1. Phonological knowledge - knowledge of the sound structure of language.
2. Orthographical knowledge - knowledge of the system of written symbols used to represent spoken language.
3. Morphemic knowledge - knowledge of the smallest parts of words that carry meaning.
4. Etymological knowledge - knowledge of the origins of words (Oakley & Fellowes, 2016)

2.3 Spelling Development

Spelling development is divided into five stages: Emergent Spelling, Letter Name Spelling, Within-Word Pattern Spelling, Syllables Juncture Spelling, and Derivational Constancy Spelling (Stephanie et al., 2018)

2.4 Emergent Spelling

During the Emergent stage, children learn to distinguish between drawing and writing. At this age, children learn how to form letters and differentiate between them. They will also begin to develop early phonemic awareness, which is the recognition that certain letters produce specific sounds.

1. Letter Name Spelling
   During the Letter Name Spelling, children begin to use letters to represent phonemes in words. Early Letter Name Spellers frequently use only a few of the strongest phonemes to represent the word. Children will begin to use the beginning and ending constant in most words and will also begin to include a vowel in each syllable. They will also learn word families and will be able to spell multiple words, including those that are unfamiliar to them, using the patterns they recognize from word families.
2. Within Words Spelling
   Children will learn long vowel sounds and patterns in single-syllable words during this stage of spelling development. They will also learn more complex consonant patterns with three letters and less common vowel patterns. Children can read and write many words correctly by the end of this stage due to their understanding of letter sounds and short-vowel patterns.
3. Syllable Juncture Spelling
   During this stage, children apply what they have learned about letter sounds and short-vowel patterns to multi-syllable words. They will learn inflectional endings as well as rules for doubling constants, changing the y to an i and dropping the final e before adding additional suffixes to words. During this stage homophones and compounds are also taught. Children are also introduced to additional prefix and suffix.
4. Derivational Constancy Spelling
   During this stage, children learn that meaning, along with patterns and sounds, are essential when spelling English words. Children explore the relation between spelling and meaning and develop the ability to connect word meaning even when the vowel sounds change from the root word. This is the final stage of spelling development, which continues as we grow older and learn new words and languages.

2.5 Common Causes of Spelling Mistakes

According to Al-jarf (2010), "any word that does not match the target word in part or in full is marked as misspelling. Any faulty words, faulty graphemes (single vowel, single consonant, vowel digraphs, consonant digraphs, phonogram, suffix or prefix) within a word are counted as errors. Any graphemes that are added, deleted, substituted by another or reversed are counted as misspellings". Many misspellings are the result of phonological and orthographic problems. Al-jarf (2010) said that "phonological problems refer to errors in which the misspelled word does not sound like the target word because the whole word, a consonant, a vowel, a syllable, a prefix, a suffix, a grapheme or a grapheme cluster is not heard at all, is misheard, is added of reversed with another. On the other hand, orthographic problems refer to those instances in which the misspelled word sounds like the written target word, but the written form or grapheme used for misspelled part does not correspond with the target word or target grapheme". Bancha (2013) has pointed out that besides phonological and orthographic problem, the writing system of the student's first language L1 influences spelling. Furthermore, Hládek, Staš, and Pleva (2020) highlight two categories of spelling errors that is called cognitive and typographic errors. The former occurs when the candidate has cognitive problems such as dyslexia. The latter is relevant to the devices being used to complete the task or the environment of writing. For instance, when there is a haste in typing that may result in one of the types of errors explained in the next section.

2.6 Common Types of Spelling Errors

Spelling errors can occur as a result of omissions, insertions (addition), substitutions, grapheme substitution, or the misplacement of a letter when writing a specific word. Omissions are the deletion of a letter from a word. An insertion error occurs when an extra letter is added to a word. When one letter is simply replaced by another, this is referred to as substitution. In grapheme substitution the mistake is not limited to a single letter or the transportation of two letters. Instead, the writer has created a spelling that is inaccurate.

2.7 The Relationship between Technology and Spelling

Learning how to spell words is one of the most important skills to develop, as it provides the fundamental foundation that all children will require throughout their education and daily lives. The rise of various learning technologies has sparked debate about how they can be used to supplement education in schools. Some see infinite possibilities for how modern technologies can support and benefit education, while others see only negative aspects and believe that technology should be banned in some learning settings. Learning how to spell is extremely important and should not be neglected by students and teachers. Despite the fact that technology offers excellent opportunities for spelling practice, it should not be assumed that learning to spell is no longer relevant or necessary. Good spelling skills are just as important today as they were before different technologies became available.

Technology, especially online tools, has had both positive and negative effect on writers writing skills. Written communication has flourished enormously as a result of technological advancement. The internet, which is considered technology, has helped many writers around the world in improving their writing and research skills. Writers are more creative in their work as a result of technology. The writing skills of

writers have improved a lot due to the widespread use of apps on social media. Through the use of technology, writers can easily complete group projects. Working in groups is essential because it enhances the quality of writers' work. Another facet of technology that is used for writing purpose is applications that have made it possible for writers to consult with each other about projects that they may need assistance with. Despite the many advantages of technology, there are also some disadvantages of technology on writing skills. (Berman, 2020) highlights those writers, for instance, relying far too heavily on technology especially for abbreviations and shortcuts to complete their tasks and this leads to integrating informal language into writing. Over reliance on technology reduces writers' independence to the point where they are unable to develop their writing skills properly.

3. Methodology

3.1 The Study Design and Objectives

For this study an experimental design has been chosen. There are several types of experimental designs, which have been classified into three groups. The first type is a true experiment in which random assignment is used in a study. The second type is non-experimental, which does not use random assignment or multiple groups. The third type is known as quasi-experimental, and it does not use random assignments but rather uses various groups of measurement (Trochim, 2006). For both the control and experimental groups, a quasi-experimental design was chosen. This study included only two groups; group A was the controlled group, and group B was the experimental group. The study sought out to find the effectiveness of using software/apps/platforms equipped with auto-checker/spellchecker features on spelling competence among EFL learners. Additionally, the study focused on finding out the common type of misspelling.

3.2 Participants and Setting

The study was conducted at Tishk International University, Iraq, KRG, Erbil in 2021-2022 academic year. The participants were chosen from the second-year students of Education Faculty, English Language Teaching department. ELT second year students take an academic writing course to develop their writing skills. Writing and spelling reinforce each other; students can improve their spelling by taking writing course. Two classes were selected to participate in this study: ELT 2A as the controlled group and ELT 2B as the experimental group. For both groups, a quasi-experimental design was chosen.

3.3 Procedures and Materials

To gather data from the participants, pre-test and post-test were conducted, which were developed by the researchers. In the beginning and end of the term, participants were asked to write one hundred-words paragraph about "someone you admire". For both pre-test and post-test, the same topic was chosen and the reason for this is that all of the participants write with similar vocabularies. The control group participants were assigned to complete the tasks by handwriting that involved weekly assignments. The experiment group participants were asked to do so using a software supported by spell-checker properties.

3.4 Data Analysis

The collected data was analyzed using a variety of tools and programs. GraphPad Prism 6,00 and t-test were used to analyze the tests, which included a pre-test and a post-test for both groups. In addition, Microsoft Excel was used to analyze the data on the most common types of mistakes made by the participants from the assignments.

3.5 Ethical Considerations

Several ethical issues were taken into consideration to make sure that the study was carried out properly. Prior to the study conduct, the researcher asked for the administrator's consent through filing a proposal to the related department where the study was carried out. The identities of the participants in this study were kept anonymous and the data collected will only be used for academic purposes. The findings do not define the institution's study program.

4. Findings and Discussions

The primary aim of the present empirical study was, first, to find out the effects of spell-checker features on EFL learners spelling competence as one of the leading factors affecting the phenomenon as compared to the effects of handwriting to improve spelling competence. Secondly, the study aimed at finding out the most frequent misspelling made by EFL learners. This section presents and discusses the finding and results of the study.

- Research Question 1: To what extent do auto-correction/spellchecker features affect spelling competence?

To answer of the main questions of the research related to the effects of spell-checker features on spelling competence, pre-test and post-test were conducted. The findings indicate that spellchecker features influence spelling competence to an extent. As it is shown in the table below, the mean for the experiment group is -1.250, while the mean for the control group is -3.00. The experiment group has a standard deviation of 2.548, while the control group has a standard deviation of 3.082. The p value of the (EG = 0.0151 while CG =0.0002). This shows both groups improved spelling as p value is less than 0.5 showing the difference made after imposed intervention. As evidently seen from the data, the difference between pre-post and post-test for both groups is statistically significant but not as highly significant as the control group. In fact, the difference made by control group is highly significant.

Table 1: Finding for research question 1

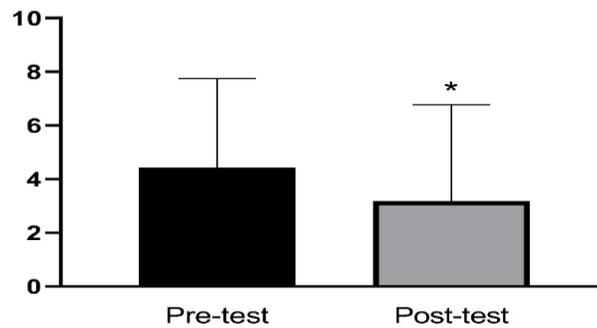| Categories	NO.	Mean of differences	SD of differences	T	P value
Spell-Checker Dependent	28	-1.250	2.548	2.596	0.0151
	N	Mean of differences	SD of differences	T	P value
Handwriting Dependent	21	-3.00	3.082	4.460	0.0002

Figure 1: Findings for research question 1 (Experimental Group) 1

To visualize the data, the findings are presented using bar charts. Figure 4.1 illustrates the findings of the effects of auto spell checker features on spelling ability showing that participants who used programs featured with auto checker specifications improved their spelling to an extent. The asterisk on the post-test bar shows the difference made.
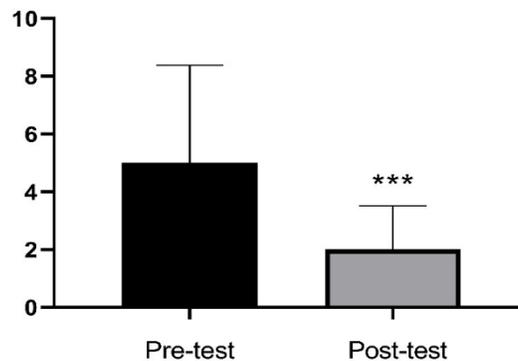

Figure 2: Findings for research question 2 (Control Group) 2

However, the control group, participants who hand-wrote writing tasks and assignments, performed enormously better at reducing the number of misspelling words in their tasks in comparison to the experimental group who typed writing tasks. The asterisks vividly represent the big difference that was made.

- Research Question 2: What is the most common type of misspelling made by EFL learners?

There are five major types of spelling mistakes:
1. Omission: the deletion of a letter from a word, e.g., wich for which
2. Insertion: the addition of an extra letter to a word, e.g., amaizing for amazing.
3. Substitutions: the replacement of a single letter by another letter, e.g., confedence for confidence.
4. Transposition: the replacement of two consecutive letters, e.g., beutiful for beautiful.
5. Grapheme substitution: the mistake is not limited to a single letter or the transportation of two letters. Instead, the writer has created a spelling that is completely inaccurate, e.g., thort for thought.
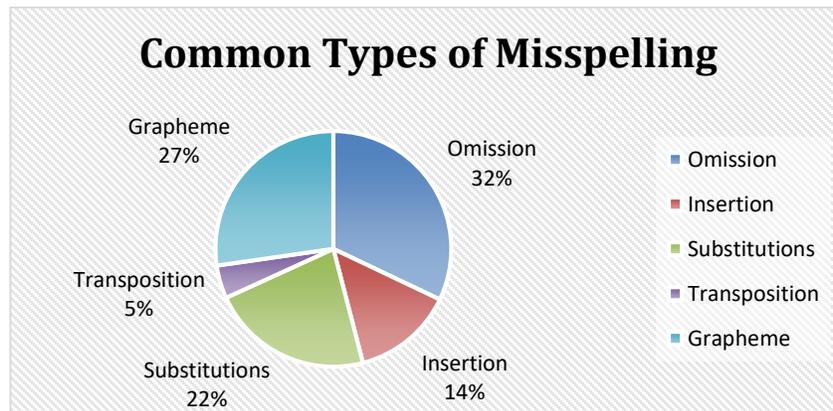

Figure 3: Illustration of the most committed common types of misspelling

To find out the answer to one of the main research questions that was related to the most common type of misspelling, we evaluated and analyzed all of the assignments as well as pre-test and post-test of the participants in order to sort the types of misspelling, and we found out, as shown in the chart, 32 percent of the mistakes were omission type of misspelling followed by grapheme, which is 27 percent of the misspelling words. 22 percent of the spelling mistakes were substitution. Insertion is 14 percent while transposition is only 5 percent.

5. Conclusions

The primary purpose of the study was to address the potential correlation between auto spell checker features inbuilt on writing programs used by many individuals in various fields with spelling competence. Particularly, the aim of this study was to find out the impact of autocorrection/spell checker features on spelling competency of EFL learners. The findings of the present study concluded that:

- Students who are deeply immersed in using programs with auto-spell checker features don't hone spelling competence as students who depend on handwriting due to the fact there is more effort involved in handwriting that makes the learning more sustained. Therefore, students must know the fact that relying profoundly on auto-spell checker features improves spelling, but not as profound as handwriting tasks. On the other side, teachers must include handwriting sessions and assignments into their syllabus and assessment tools as they serve a great deal of triumph at spelling enhancement.

- To provide a solution for any problem, identifying the problem would be the initial step towards the solution. Having that considered, the present study aimed at pointing out the most common type of misspelling made by the participants. The results showed that omission (leaving out a letter or more) followed by grapheme (completely inaccurate spelling) are the most common type of spelling mistake. Taking that into account, teachers should provide theoretical and practical sessions aiming at raising awareness among EFL learners of the types of misspellings.

To conclude, it is highly recommended that students focus more on their spelling and handwriting abilities. We also recommend teachers to pay close attention to spelling because it is an important skill. Spelling is a highly beneficial skill; institutions should provide classes to teach students spelling skills.

6. Limitations of the Study

- The study was conducted at TIU, a private university, in Iraq with the majority of the participants being Kurdish.
- The time of the study was only one semester; if the duration of time was longer, we would have more accurate and reliable results.
- The study was carried out to one department at one private university with 55 students, therefore we cannot generalize the results.
- To collect the data, we used only one data collection tool which was pre-test and post-test.
- The study methodology was only quantitative.
- Despite the limitations of this study, the findings indicate that handwriting has a positive impact on writing and spelling skills.

7. Recommendations for Further Study

There are a number of research gaps in our knowledge around the effects of technology in general and auto spell-checker in particular on spelling competence. Therefore, conducting further research studies is recommended aiming at in-depth exploration in the field as listed below:

- The present study merely focused on the effects of auto-spell checker features inbuilt in writing programs on spelling competence. There could be more research studies to investigate other writing features on spelling as well as other language skills.
- The data collected were quantitative gathered from tasks and tests conducted throughout the semester. Other methods of data collection would definitely serve the body of literature in the field.
- The methodology followed was quasi-experimental. Other types of methods would give out more relevant results that could enrich the matter.

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