



THE INFLUENCE OF SPELL-CHECKERS ON STUDENTS' ABILITY TO GENERATE REPAIRS OF SPELLING ERRORS

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ABSTRACT

Recent studies show that spell-checkers help reduce students' surface errors in writing by flagging spelling errors and giving correct spelling suggestions. This study investigates if the error correction provided by the spell-checker tool in word processors are internalized by students. A quasi-experimental two-group study was conducted on 30 Form 1 students in a school in Kuching, Sarawak. The learners were given dictations which contained words listed as commonly misspelled words according to Oxford University Press (2012). The experimental group were given three dictations-one in which they used word processors and allowed to use the spell-checker tool and the control group was given two dictations, both handwritten. The data gathered were analysed using a software for statistical analysis. This study found that, while the spell-checker helped the learners revise their spelling on one dictation exercise, learners still made the same errors in their spelling after the use of spell-checkers. Therefore it argues that while spell-checkers help eliminate surface errors, they have very little influence on correcting the errors on the cognitive level.

Keywords: Spell-checkers, word processors, error correction, dictation, spelling

1.0 INTRODUCTION

One of the roles of the English Language teacher is to help learners increase their proficiency in the language. This includes the mastery of the five language skills: reading, writing, speaking, listening and "grammaring" (Larsen-Freeman, 2005). There are many ways in which the English teacher can improve the students' language proficiency and one of it is by providing feedback; for example, error correction. Error correction can be defined as any sort of feedback by a language teacher to correct error in the target language by learners (Lightbrown & Spada, 1999) and is an important component that will contribute to the students' success as language users. For the purpose of this study, I will focus on error correction in one skill area which is writing.

2.0 LITERATURE REVIEW

2.1 Types of Error Correction

There is a lot of research and debate on the effectiveness of error correction and its contribution to the improvement and development of writing accuracy (Corpuz, 2011).

Despite this, providing feedback is important because of the important role it plays in guiding and helping learners improve their proficiency in the English language. The emergence of word processors with spell-checkers has helped a lot in writing and processing word documents. Spell-checker is a function which automatically highlights a spelling mistake or error and suggests possible spelling correction to users of word processors. Based on definitions of different types of error correction provided by Lyster and Ranta (1997), spell-checker can be categorised as an explicit error correction. Research shows that spell-checkers have helped a great deal in reducing surface-level errors such as spelling and punctuation (Figueredo & Varnhagen, 2006). In a study by Jinkerson and Baggett (1993), children using spell-checkers corrected 32% more errors than children using dictionaries. This is due to the flagging of errors by the tool, thus helping users to notice errors or mistakes easier. According to Peterson-Karlan (2011), there were nine studies between 1984 and 2010 on the use of spell-checkers in writing by learners with learning and academic disabilities. However, in all these studies, the spell-checker was perceived as a tool for editing and revising writing, not as a medium of corrective feedback.

The figure below shows the different types of error correction for spoken and written language as listed by Lyster and Ranta (1997) and Panova and Lyster (2002). Spell-checkers and grammar checkers, although widely used and are highly encouraged for revising and editing written works, belong to neither spoken error correction nor written error correction. The nature of error correction is bound by the communicative approach in Computer-Assisted Language Learning (CALL), therefore is it not stagnant like written error correction but not integrative like the spoken error correction. One thing sets spell checkers apart from the list that the authors made; it is done not by the teacher, but by a software. Therefore, while the teacher may decide what error to correct (or ask the learner to correct), the spell checker does not differentiate. It highlights all the mistakes and – in most cases – offers a solution. By referring to definitions of the different types of error corrections provided by Lyster and Ranta (1997) and Panova and Lyster (2002), it can be deduced that spell-checker is a type of explicit error correction.

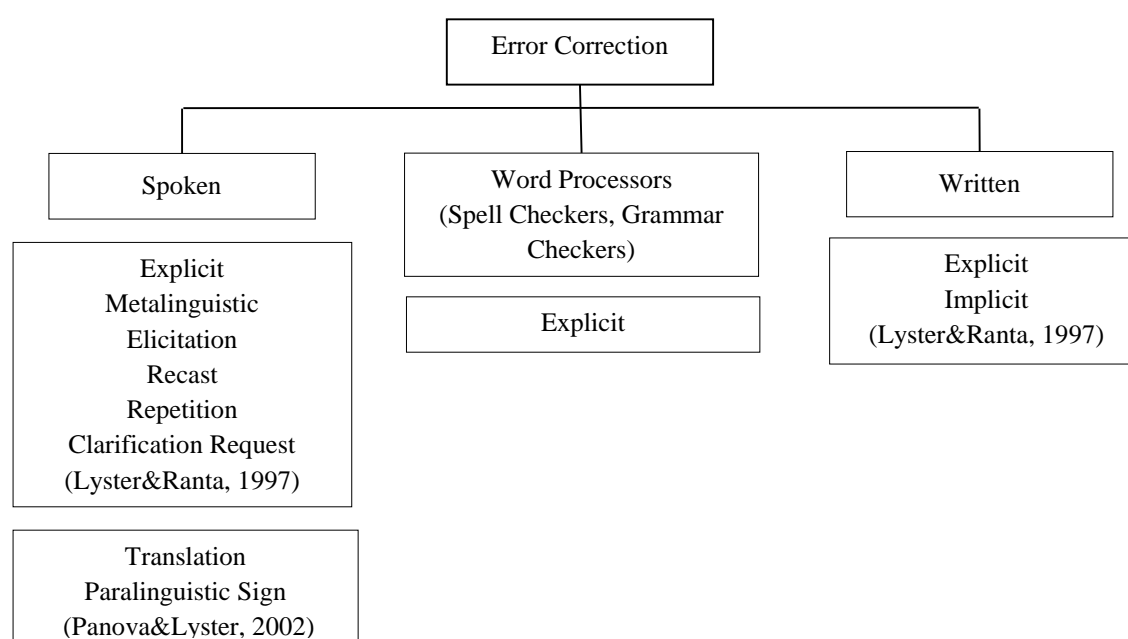


Figure 1: Types of Error Correction

As the use of spell-checkers as corrective feedback has not been discussed in the literature, or categorized by researchers as such, there is very little we know about its effectiveness on learners' self-repair. This present study then, applies quantitative and qualitative methods in order to investigate the effects of spelling-check functions in word processors on the ability of English language learners to generate repairs of spelling errors. Lyster and Ranta (1997) introduced the term "student-generated repair" which refers to students' ability to repair their error. Note that in this study, the focus is on error which is a deviant item intended by the learner and not on mistake which is unintended and can be corrected by the learner without help.

2.2 Spell-Checkers as Error Correction Tool

Paton (2012) stated that Oxford University Press (2012) published findings that primary and secondary school children were "increasingly encouraged" to look up words using dictionaries and electronic spell-checkers. Oxford University Press conducted an analysis of more than 33 million words written by pupils aged 7 to 13 and found that these children were "struggling to write simple and everyday words because of an increasing reliance on spellcheckers". Users often attribute too much credibility to computers (Galletta et al., 2005). Therefore, learners become over-reliant on the spelling-check function to correct their spelling and the spell-checker does not help 'repair' students' errors internally. Lyster and Ranta (1997) conducted a research project to see which corrective feedback or error correction encourages learners' to self-repair their error. They introduced the term "student-generated repair" which refers to students' ability to repair their error.

The benefits of error correction is debated in the literature. Some (Truscott, 1999; Walker, 1973; Young, 1991) say that there is no need for explicitly correcting errors, or mistakes, while others (Carroll & Merrill, 1993; Lyster, 2001; Lyster & Ranta, 1997) argue that it is an important part of the learning process. Ellis (1997) and Lyster and Ranta (1997), highlighted the didactic potential of error-making, pointing out that teachers should aim for students to self-correct or peer-correct, rather than repeat correct forms after the teacher (explicit correction). A study conducted by Milicev (2014) on corrective feedback and learner uptake in six university-level EFL classroom concluded that although error repair occurred in a little more than half of the corrections (55 percent), only 21 percent of those corrections resulted in student-generated repair.

There are various implications drawn on written and spoken error correction. It is obvious from findings of previous studies that the effectiveness of written and spoken error correction is still inconclusive. With the increasing use of computers and word processors, error correction has gone a step further. Spell-checkers, although used in writing, functions like spoken error correction. It provides feedback immediately after error is detected. By reviewing previous studies on error correction; both spoken and written, it can be inferred that further research still needs to be done. Morris (2010, as quoted by Carlyle, 2012) said that "computers are no good for spelling, you have to practice writing it, some children will really need that kinaesthetic movement of the arm". Based on Morris' argument, spell-checkers in word processors do not allow this process to occur because, at the click of a button, the error will be corrected. Spell-checkers help learners revise and edit their written work, thus fewer surface errors will occur. Gupta (1998) mentioned that spell-checkers can help non-proficient writers by correcting words and generating words. It is also evident that learners displayed more vocabulary when using spell-checkers. However, the question is, after correcting the words, are the corrections embedded into their target language system?

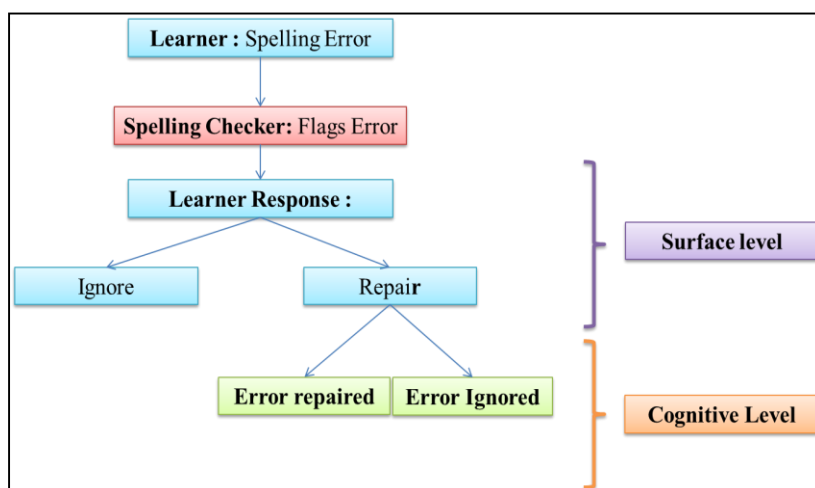


Figure 2: Treatment Scheme for Spelling Error using Spell-checkers

Above is the treatment scheme for spelling errors using spell-checkers. When a language learner makes an error, the spell-checker immediately flags the error with a wavy red underline. The learner will “notice” the error and choose to repair or ignore the error. If the learner chooses to repair the error, he or she will right click on the wavy red underline and a list of suggested spellings will be provided by the spell-checker. The learner will then choose one of the suggested spelling; which may or may not be the correct spelling (or word) intended. When error is repaired on the word document, this is said to be only surface level repair. Teachers will observe that the error has been eliminated from the document, however, cognitively, the error can either be ignored or repaired. A computer user sometimes subconsciously selects suggested spellings given by spell-checkers without registering the correction into their second language system.

3.0 RESEARCH DESIGN

A quasi-experimental design was employed on two groups of Form One English language learners from a full residential school in Sarawak. One group was the experimental group (n=14) and the other was the control group (n=16). The number of samples recorded here are the number of learners present for all dictation sessions arranged for their groups.

The treatment was a typewritten dictation in which the learners employed spell-checkers to check their spelling errors. The control group was given two dictations, both handwritten and the experimental group was given three dictations; the first is handwritten, the second dictation was typed out using a word processor, and the third was handwritten as well. In all dictations, the students were given some time to reread their work and make corrections accordingly. The number of corrected items in the post-test is the dependent variable. All the dictations used the exact same text.

Learners were permitted to ask the person dictating the sentences to repeat a sentence or a particular word. The participants were also allowed to ask the meaning of the word. This was done to eliminate any possibilities of word choice errors or homophone confusions. When the dictation was over, learners were asked to review their work individually to also give them time to be sure of their spelling. They are given as long as they need, until they are convinced that there are no more corrections to be made. This is to eliminate any possibilities of lexical errors or spelling mistakes, leaving the answer sheet with only spelling error. In case of typewritten dictation, students were asked to revise their typewritten test again using the

spelling checker. Although the spelling-checker was set to flag errors ad-hoc, participants are still asked to do it manually to eliminate all possibilities of the spelling checkers malfunctioning or wrongly set. All the students' work on the computers were saved and printed out. These are then, analysed.

The learners were given a dictation which consists of five sets of sentences. Within these five sets of sentences, only 35 words are analysed for this study. These 35 words are words which are recognised by Oxford University Press (2012) as some of the most frequent spelling errors made by students. The reason why the students are dictated sentences instead of given spelling tests is because this study looks at how spelling checkers help in eliminating errors in students' writing. Therefore, putting the words into sentences also provides them with contextual clues which will help eliminate possible lexical errors which may be caused by, for example, homophones. The pronunciation of the test administrator might have an effect on students' choice of words, thus, making the error not a spelling error, but a lexical error. There is no time limit to the dictation, and students are allowed to ask questions to the test administrator to clarify words or repeat the sentences. The data collected was cleaned to remove incomplete data (the learners must be present for all sessions arranged for their particular groups). After data was cleaned, a reliability tests were conducted using Statistical Package for Social Science (SPSS) v.21 and the Cronbach's Alpha for the data obtained is 0.964.

4.0 ANALYSIS AND DISCUSSION

All the learners in this sample come from various ethnic groups which are mainly from Sarawak and are from various socio-economic backgrounds. This school is a school under the full residential school system. It should be noted that all the learners in this school have scored at least 4As in their Ujian Penilaian Sekolah Rendah (Primary School Examinations) which is the minimum requirement to enter the school. It is expected that the learners already have a high level of language proficiency and are least likely to make errors. These learners were also selected with the assumption that they have high level of English Language proficiency to eliminate any possible lexical or grammatical errors because this study aims to examine only spelling errors. However, analysis of the data collected suggested otherwise.

Findings from this study suggest that the most frequent errors made by learners are omission and replacement of letters. In the event that the student is desperate to spell a word but is unsure, the student reverts to using their native language or L1 phonics. This is why L1 influence is also one of the frequent errors committed by the participants of this research.

Table 1: Frequencies of Spelling Errors According to Categories

Categories of Spelling Errors	Frequency
Omission	118
Replacements of consonant / vowel	76
L1-influence	43
Addition	36
American Spelling	27
Mis-use of punctuation, spaces, abbreviation, capitalisation etc.	26
Mis-ordering	4
Total	330

This is very interesting because it echoes the findings in Botley and Dillah (2008), who claimed that the two most frequent error categories made by students - in their case these

were degree and diploma students in Malaysia- were omission and replacement. However, it should be noted that the data in the present study is not authentic collection of student work unlike in Botley and Dillah (2008), which was corpus-based.

The most common spelling error in this study is the word “disappeared” with 23 out of 30 samples making this error. This is similar to findings by Oxford University Press (2012) in which, “disappeared” was the most commonly misspelled word as well. It is followed by “clothesline” and “exists”. Most of the error made by students for “clothesline” is the mis-use of spacing. Most of the error committed for “exists” is omission in which students left out the “s”; making “exists” as “exist”. This might be a grammar mistake more than a spelling mistake although the tests administer explained that the sentence is in present tense, and the subject a third-person. This might prove that the participants might have some problems with their understanding of subject-verb agreement.

We should also take note of the strong L1 influence on students’ spelling. In the case where a student is desperately trying to spell a word, they revert to using the L1 phonics (which in this case is Malay phonics). It is undeniable that language learners’ L1 influence some aspects of their second language acquisition (Odlin, 1989; Schwartz, 1998). The development of spelling skills is focused on the difference of the surface structure of the language. In general, spelling errors occur when there are incongruent phonemes between L1 and English L2 (Park, 2011) and the student replace the English phoneme that does not exist in their L1 with one that exist in their L1. Figure 3 are some of the examples of L1 influence on students’ spelling.

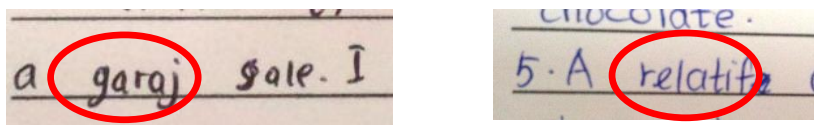


Figure 3: L1 influence on Students' Spelling

Notice that the ‘ge’ in garage is replaced with ‘j’ which, in Malay, produces the sound /dʒ/. The ‘ge’ is an orthographic representation that does not exist in Malay, and Malay, being phonemic or having close spelling sound representation spells it as ‘j’. The word ‘relative’, pronounced /rel.ə.tɪv/, has the ‘ve’ replaced with ‘f’. The phoneme /v/, which is a voiced labiodental fricative does not exist in Malay phonology and therefore replaced with voiceless labiodental fricative /f/.

There are significant differences between results from pre-test and treatment in the experimental group, which agrees with previous studies (Figueredo & Varnhagen, 2006; Galletta et al., 2005; Figueredo & Varnhagen, 2004) conducted on spell-checkers used as a tool to edit and revise their written work. The findings from this study prove that spell-checkers do help eliminate most of the spelling errors in the students’ written work. The table below shows the means and standard deviations of the dictation scores. The maximum score (all correct) would be 35.

Table 2: Means and Standard Deviations of Dictation Scores

Group	N	Pre-test		Treatment		Post-Test	
		M	SD	M	SD	M	SD
Experimental	14	22.857	7.04	28.286	8.21	25.214	6.716
Control	16	24.188	7.60	-	-	24.500	6.16

By analysing the results, it is evident that spell-checkers do not influence students' abilities to generate repairs on spelling errors. This is because results showed that there are no significant differences between the pre-test and post-test results in the experimental group. Results also showed that there are no significant differences between the post-tests results between the experimental group and the control group although there are some improvements in the results of the experimental group after the treatment.

One thing about using spell-checkers is that learners must at least have a clue of how the word should be spelled because the spell-checker gives suggestions based on the spelling made by the student. Let us look at the example taken from the experimental group's treatment test below. The correct word is "imagine". However, note the suggested spelling given by the spell-checker in figure 4. The correct spelling is "imagine". However, due to influence by the first language, which in this case is Malay, the student spelled it as "emajin" which of course is an error. It was detected by the spell-checker and flagged. However, when right clicked for suggestions, the suggestions given were not "imagine" but "remain", "email", "main" et cetera. The suggestions the spell-checker gives depends on the algorithms it is using. The spell-checker compares it to words in the word-processor's dictionary. It does not understand the original word, or the context in which the word is being used. Another example that we can see from figure 4 is the original phrase, 'once upon a time' which became 'One open time' – when corrected using spell-checker. In other words, the students were focusing on form (as is usually the case with dictations) and not on the meaning of what they were writing. It seems that students who used the computer just tried to make sure there were no underlined bits.

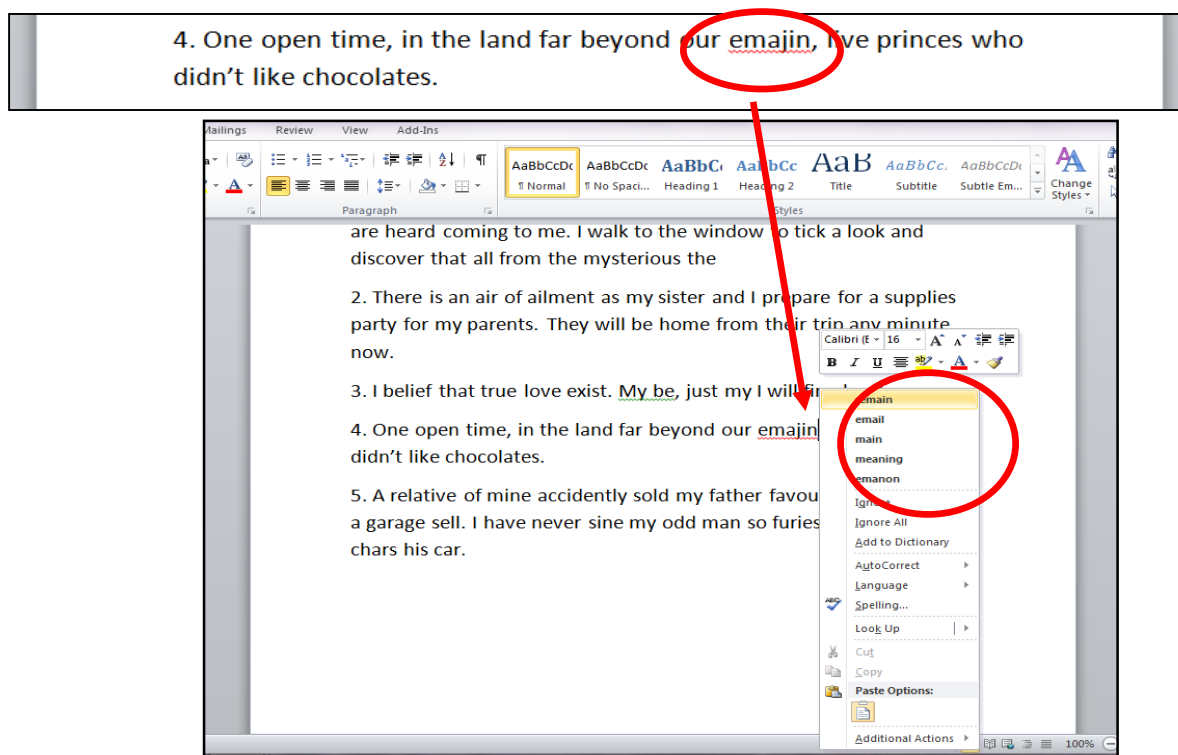


Figure 4: Example of Spell-checker Spelling Suggestion by Microsoft Word

Figure 5 is a comparison of a participant's answer sheet for pre-test, treatment and post-test. Although the spell-checker repaired the spelling error during the treatment, the error is still repeated in the post-test.

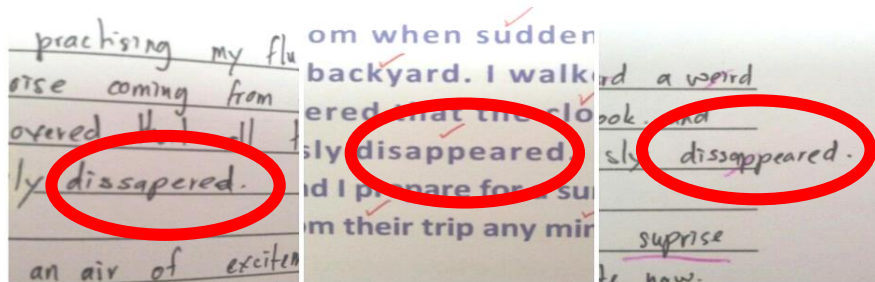


Figure 5: Comparison of a Participant's Work (L-R: Pre-Test, Treatment, and Post-Test)

Further analysis of participants' treatment answer sheets, which is in digital format, shows that after the use of the spell-checker, there are no more flagged errors. Even so, the sentences still do not make sense. This is to suggest further that the spell-checker, although an essential tool in helping learners revise their writing errors, it is not a tool which can effectively correct learners' errors by itself. A spell-checker, as categorised in Figure 1, is a type of explicit error correction. The findings of this research also agree with previous studies which conclude that explicit error correction does not do much to help students' generate repairs of spelling errors (Tedick, 1998). Consequently, the spell-checker cannot be classified as an efficient corrective feedback method because it cannot help learners generate repairs of spelling errors.

The final two research questions examined the spell-checker's role in modifying the spelling errors on the cognitive level. Findings from this study suggest that there is no significant difference between the pre-test and post-test results from the experimental group. It also verified that there is no significant difference between the post-tests results from both experimental and control groups. This suggests that the treatment has little to no effect on students' errors on the cognitive level. It did not help repair the errors, and the corrections are not internalised; thus, allowing learners to repeat the same error again.

Based on the findings of this study, policy makers and educators should revise the syllabi and content of their language courses and how examinations are administered to students. It is unfair for the learners to be doing their assignments and homework on computers where they can use the spell-checker and then sit for the exam without computers and rely on their language abilities without the help of spell-checkers. This is because their language practice did not permit them to repair whatever spelling errors they have as they have been relying on spell-checkers during their practice process. There has to be a parallel between the on-going assignments and the final product otherwise the process will not foreshadow the final product.

This study also guides pedagogy. By knowing the most commonly spelled word and most frequent category of error made by students, language teachers can design their classes to remind learners of certain spellings of certain words. In the English Language, there are letters which are included in spelling but not pronounced: the silent letter for example "h" in "hour" or "e" in "something". This does not exist in the Malay language which is spelled the way it is pronounced (Ranaivo-Malanyon, 2005). Knowing this, we can eliminate the L1 influence on spelling errors by making teaching English Language Phonics and Phonetics an important component in the local English Language syllabus. This will help the mastering of the English Language by English Language Learners. As described by James (1998), spelling is a surface-level error therefore the spelling skill is usually ignored by teachers. Perhaps a spelling course can be developed and integrated into the teaching of other language skills like reading, writing and vocabulary.

Software developers should improve spell-checkers for L2 writers by improving the words suggestions and error detection. It should also include local words which have been adopted into the local English Language dictionary. Maybe flagging the spelling error is not good enough. Developers can create word processor programmes that could be customised for English Language Learners in which the spelling error is flagged but no suggestions are given. It will prompt the learner to open a dictionary to find the intended word. It is a longer process but possibly effective in internalising the error correction. Perhaps if spell-checkers are enhanced with explanation or voice application, the correction of spelling error will be effectively internalised thus helping language learners to be more competent in the language.

By knowing that the spell-checker has no influence on students' ability to generate repair of spelling error, what language teachers in a Computer-Assisted Language Learning (CALL) classroom could do is to remind learners that the spell-checker is not always correct. Language teachers could also remind learners that they can use spell-checkers to their advantage by looking at how the word is spelt and not just clicking on the spelling suggestions and moving on. By doing this, not only will the language learner be more cautious when selecting suggested spellings by the spell-checker, they will also make sure they remember the corrections they have made. This way, spell-checkers will assist learners

not just in noticing and hypothesis-testing (as suggested by Swain's Output Hypothesis), but also in metalinguistic function.

Perhaps it can also be done for different levels of language proficiency to see how learners from different language proficiency use the spell-checkers. A study conducted for learners with language-based learning disabilities like dyslexia will yield different results. Instead of using the quasi-experimental design, the research should use the true experimental design to get more accurate findings which can be generalised to the whole population

Within the period between the treatment and the post-test, participants might be exposed to other corrective feedback which might interfere with the post-test results. To eliminate this factor, the experiment was conducted within two weeks. However, that does not stop the learners from correcting their error through other more effective feedback. It would also be better if the research is done over a longer period of time. Instead of only 1 treatment process, a few treatment processes can be done on the same group with different instruments so that the results can be compared. It will also provide concrete proof on the influence of spell-checkers on students' abilities to generate repair of spelling errors.

The instrument of this research may also be insufficient. There are only 35 targeted words in the instrument for the dictation and this is not enough. The sample of words may also be selective to certain categories of errors. For example, the word "surprise" in which a majority of participants spell as "surprise", adds to the frequency of omission errors committed. Also, instead of only 5 sentences with 35 flagged words, future researchers should add more targeted words or if possible, target and analyse all the words in the sentences given. A whole variety of spellings based on the phonemes and graphemes should be added into the instrument. The test administration should also be done simultaneously in a large group so that the extraneous variables like the temperature, condition of venue, mood etc. can be controlled by the researcher. There should also be helpers to make sure that participants do not cheat or discuss with their friends.

5.0 CONCLUSION

In conclusion, this research suggested that spell-checkers have little to no effect whatsoever on students' spelling errors on the cognitive level. It did not help repair the errors, and the corrections are not internalised; thus, allowing learners to repeat the same error. It is hoped that future studies take into consideration the limitations of the study and the suggestions for further research. This is necessary for future studies to draw more concrete conclusions on the influence of spelling-checkers on students' abilities to generate repairs. The participants being learners of an academically prestigious school, it is expected that the learners are least likely to make mistake. However, based on the findings, even excellent learners have problems with language proficiency despite scoring an A or B for English in their UPSR examinations. As educators, it is important for us to know that technology can only do so much to help language learners in improving their language skills. Although the spelling-checker was not invented to help language learners learn and improve their spelling, it can be used to serve that purpose with proper guidance by the language instructors.

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