

Effectiveness of Online Grammar Checker to Improve Secondary Students' English Narrative Essay Writing

Kalpana Jayavalan & Abu Bakar Razali

Abstract -- The purpose of this study is to investigate whether a grammar checker application, i.e., Grammarly, has positive effects in the narrative writing of the secondary school students. In the Malaysian context of English language learning, the major difficulty that the students encounter would be writing and it has always been the reason why students cannot excel in the examination (Chuo, 2004). Thus, this study explores the effectiveness of Grammarly, a grammar checker computer application, in aiding secondary students' narrative writing. The research is guided by the theories and principles of Vygotsky's (1978) Zone of Proximal Development (ZPD) and Knowles' (1984) Self-Directed Learning approach. This study employs a quantitative research methodology, which is quasi experimental approach with non-equivalent control group design. Participants in this study were 60 form four students from two different classes in a public primary school in a state in western part of Peninsular Malaysia. They were divided equally into an experimental, and a control group and the students came from the same age group and English language, particularly English writing proficiency. The data was gathered for research through pre- and post-tests which were then analysed using paired sample T-Test. Continuous quantitative type of observation data (i.e., scores from writing exercises) was also obtained from their engagement with series of treatment using the Grammarly grammar checker application. The findings revealed that the grammar checker aids the narrative writing among the students in the experimental group, especially in sentence construction. The results of this study revealed that at $P = .000$ alpha level the grammar checker does aid in the writing of narrative essay among the Form 4 students, particularly on their use of correct grammar functions (namely subject-verb agreement, sentence structure, spelling, and punctuation). The researchers call for more future research on the grammar checker as it holds opportunities for the students to progress in their narrative writing. Using grammar checkers might be a great shift from a traditional learning approach to a more independent self-directed learning approach among students.

Keywords -- Computer-Aided Instruction, Grammar, Grammar Checkers, Writing

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I. INTRODUCTION

In Malaysia, English is accorded as a second language as stated in Article 152 in the Federal Constitution of Malaysia (Nor Hashimah Jalaluddin, 2008). And to be part of globalization, it is important that one is equipped with a good command of the English language to make it in the global market. Besides, the ability to write in English is also

considered one of the crucial skills required to insure one's employment in the current job market (Siti Hanim Stapa, Tg Nor Rizan Mastum, Saadiyah Darus, 2008). Writing in English plays very important part in students' performance, and it starts from primary until secondary level. However, there is growing concern about the level of English Proficiency in Malaysia. In 2013, the English Lab program under the Government Transformation Program that was conducted by the Performance Management and Delivery Unit (PEMANDU) from the Prime Minister's Department, 1191 secondary schools were identified with students who were sitting for the Sijil Pelajaran Malaysia (SPM) English examination failure rates exceeding 23% (New Straits Time, 2015). Since writing is a major problem for Malaysian students, one might question how we can enhance the writing performance among the students? The conventional method of teaching might not be effective as the number of failures are quite high, especially in the writing section. The basic of writing, which is the grammar element, is important in ensuring good writing. Therefore, the question is how teachers can teach students the grammatical aspects which are essential in writing?

One theory that prompted research on the effects of online grammar checkers on narrative writing is Vygotsky's Zone of Proximal Development. Vygotsky's (1986) theory of Zone of Proximal Development (ZPD) is based on the idea that learning can lead to development, and development can lead to learning. The ZPD is the area between a learner's level of independent performance (often called developmental level) and the level of assisted performance- what the child can do with support. Vygotsky (1978) also believed that some 'tool' mediates this activity and these tools might be physical, such as using computers, or psychological, such as using strategies that promote self-directed learning. This is where the grammar checker comes in, particularly as tools to help them when the students are given writing tasks. By assisting learners within their ZPD, teachers are supporting their growth. The ZPD concept is seen as scaffolding, a structure of 'support points' for acting. In the concept of the zone of proximal development (ZPD), the idea of scaffolding is really important. Scaffolding is a process through which a teacher or more competent peer helps the student in his or her ZPD as necessary and tapers off this aid as it becomes unnecessary (Riazi & Rezaii, 2011). Vygotsky's (1978) Zone of Proximal development can be related to the grammar checker in learning about English writing. This means scaffolding is needed from 'more knowledgeable other' to succeed in writing narrative writing.

Another theory that is essential in this research is Self-Directed Learning. Knowles (1974) described Self-Directed Learning as a process in which individuals take the initiative without the help of others in diagnosing their learning needs, formulating goals, identifying human and material resources and evaluating learning outcomes. Regarding language instructions, the use of computers has a great influence in education, especially in teaching the second language. Information Technology (IT) based Discovery Learning could make it possible for learners to take responsibility for selecting the learning goal, determining the learning strategies and monitoring the learning progress.

This idea of self-directed learning in the IT learning environment is included with the use of grammar checkers as well. This environment is where students can learn the process of writing, but with the advent of online grammar checker. It is also where the teachers will be in the lesson, but their traditional role to deliver the lesson is slightly modified whereby they are facilitators. This learning approach promotes self-directed learning where the students will be the independent learners who know what they want and need to learn. For example, when the students are using the grammar checker, 'Grammarly,' their task is to remedy their grammatical errors through the guide and feedback from the Grammarly software to which they have to respond onto their essays. Once the errors are underlined and flagged in the system, this is where they start learning. When they read the explanation offered in the comments, they learn why such mistakes occurred and other alternatives they could use to replace the errors. They can do this in their own pace and even in different locations. As online grammar checkers can be accessed anywhere, even in their homes, they can redo and read more on the grammatical aspects of writing. Only when the explanation are difficult to comprehend, they could then ask their teachers who act more as facilitators and guides throughout their learning of writing.

II. LITERATURE REVIEW

In Rawley and Meyer's (2003) study, the Computer Tutor for Writers (CTW) program was tested and evaluated on 471 students from 54 classes of 8th and 9th grade English in 23 middle and high schools in Texas, New Mexico, Ohio, Pennsylvania and New York during full school year. The result indicated there were an improvement in the students' ability to follow and complete writing process. The achievement gain of up to one and a half letter grades for students using CTW is consistent with results in related research programs that use similar training technologies for teaching fundamental skills (Carlson & Crevoisier, 1994; Carlson & Miller, 1990, Wenger, 1987). In 2003, Holdich and Chung conducted a study on the effects of the computer tutor, which was called 'HARRY,' computer tutor for narrative writing. The results showed that children who used HARRY wrote better stories. It also helped children to cope with several writing tasks by presenting different aspects of the writing process when requested. This study was limited to

children aged 8 to 9 years old with mixed ability. In 2008, Reva Porter and Dorothy Fuller conducted a study using grammar checker in writing instruction for 7th graders. The results showed that grammar checker helped students to make more informed choices in writing and at the same time they learned grammar. A similar study was conducted in Jordan by Abu Naba'h (2012) to examine the effect of using computer-assisted grammar teaching in the Jordanian EFL teaching context focusing on passive voice. The samples were 212 secondary school pupils studying English as a foreign language. The students were randomly put in 4 experimental and four controlled groups. The study revealed that the experimental group which was exposed to the software showed statistically significant differences on the mean scores on passive voice.

Nikoo Mohammadi, Bahman Gorjian and Mohammad Alipour (2012) conducted a study on the effects of computer assisted language learning on English as a foreign language (EFL) pre-intermediate EFL learners' descriptive essay by using spelling checker software b in Islamic Azad University in Ahvaz. In this study, a simulated proficiency test was run to 140 available EFL students whose ages ranged from 19 to 29 and 50 students were selected as pre-intermediate learners then randomly divided up to 2 groups of 25 students. Results obtained demonstrated that computer-assisted language learning was of use to the language learners and their writing skills progressed regarding grammar and spelling. It was found that the students in the experimental group had fewer grammatical and spelling errors in their essays.

In the Malaysian secondary school students' context, Govindasamy and colleagues (2013) used the online automated feedback to measure students writing potentials and development of skill levels which was MYACCESS (Govindasamy, Tan & Yong 2013). MYACCESS is an online automated feedback system which is similar to a grammar checker. It was piloted in two local universities and received good feedback from the students. It was found that MYACCESS helped to overcome the problem of delayed feedback and minimized the tedious task of writing and revising the essay drafts with pen and paper. The students showed positive responses, however, the results they obtained were more consistent with the previous research (e.g., Paulus, 1999; Hyland, 2000; Weaver, 2006) showing that most students preferred teacher – written feedback compared to online – automated feedback (e.g., Chen & Cheng, 2008; Sanz & Morgan- Short, 2004).

There is relatively sparse research on grammar checkers and its effect in writing, especially in Malaysia. In this regard, there needs to be more research to take a new dimension in looking at grammar checkers in the context of narrative writing among secondary school students in Malaysia. With the existence of some research mentioned previously, grammar checkers are proven to help school students regarding assessment and grading the essays. But, more research is required to investigate the effects of grammar checker on students writing. Some studies have attempted to explain why our Malaysian students have

continuously been unable to achieve reasonable competency level in English (see Naginder, 2006; Jalaludin, 2008). Therefore, the current research is important to help to understand how the online grammar checker, ‘Grammarly’ aids the writing of English narrative writing among Malaysian secondary school students.

III. RESEARCH METHOD

Research Participants

The participants are 60 Form 4 students (n=60) at a secondary school in the Hulu Langat District, Selangor, Malaysia. All these students are in science classes. The students are grouped into science Stream based on their PT3 performance in Mathematics and Science subject. All of the students took English as one of their subjects which consists of writing, reading, speaking and listening skills as well as English literature and English grammar. English is taught for six periods in a week for each of the classes. The uniqueness of this school is that teachers teach separate skills for the classes, meaning each skill, for example, writing, would have one separate teacher. For English, these students would be taking three papers. The first paper is 1119/1, which is writing a paper, followed by 1119/2 which comprises of literature and paper 3 (1119/3) which is oral. The 60 students chosen are not native speakers of English. 59 of the students have the Malay language (i.e., Bahasa Melayu) as their first language and one of them speaks Tamil as the mother tongue. The age of the participants was all 16 years old. From the total students, 35 were girls, and 25 were boys. As far as the researchers know, all these students had never used an online grammar checker in their writing before the study was conducted.

In this study, the researchers chose two classes, in which both classes were science stream classes, and they share similar characteristics, for example, age; and most importantly their level of mastery of the English language. This is where, based on their PT3 results, both classes were similar regarding their English achievement. Table 1 below shows the achievement of both groups for their PT3 Writing Component.

TABLE 1: THE ACHIEVEMENT OF BOTH CONTROLLED AND EXPERIMENTAL GROUP FOR PT3 WRITING

Bands Of Writing	Experimental Group	Controlled Group
A	1	1
B	0	0
C	7	3
D	1	1
E	6	10
F	10	10

Table 1 shows the achievement obtained by the participants in both groups for their PT3 writing component for 2014. The differences seen from the table is only in Band C and E but minimal. As overall, the participants are equal regarding their mastery of the writing aspect, which is very important

for this study. So, the participants were balanced regarding achievement, and also they have never used any online grammar checkers to write essays at home and school.

IV. RESEARCH INSTRUMENT

This study employed a quasi-experimental design which involved administering two different tests, a pre-test, and a post-test, to a total of 60 students. Both tests included narrative essays questions obtained from 2015 SPM English examination. In doing this task, the students were required to produce an essay with the length of 300 words in an hour. In between doing the written tests, the experimental group was given treatment in the form of the researchers teaching them English narrative essay writing using Grammarly grammar checker, while the control group was taught on English narrative essay writing using the traditional English writing instruction. The exposure to and treatment on Grammarly was given for seven weeks to the experimental group to which they were required to complete several writing tasks in class and at home using the Grammarly, grammar checker. Scores from both the pre-test and the post-test were calculated to reveal the differences between both groups which were the controlled and the experimental group regarding their improvement in their narrative essay writing.

V. DATA COLLECTION PROCEDURE

Permission was obtained from EPRD Putrajaya as an important initial step before conducting the research. The permission was obtained in about two weeks after submitting an online application and via postage of the relevant documents. Once it was done, the researchers issued a letter informing the information and the details of the study to the chosen school. After this procedure, the Head of Language department of the chosen school assigned the teachers and the two classes involved in the study. The headmistress and the other senior assistants also cooperated and helped in conducting this research.

The participants were briefed about their roles in the study and was asked to be honest in their answers and their participation in the study. In the context of educational settings, it is sometimes not necessarily vital to obtain consent. It is a great dependence in the school itself on how to inform the participants as they are the ones who make the deciding point for the participants. The participants were also informed that the findings would be used for research purposes only and their responses would remain anonymous. The participants were informed that they could ask the researchers any questions to make sure they understood each question and answered appropriately.

In conducting this study, the researchers used the non-equivalent control group design. The non-equivalent control group design with pre and post-test has been described as “one of the most commonly used quasi-experimental designs in educational research” (Cohen, & Morrison, 2007, p.283). This is often the case since students are naturally organized

in groups as classes within schools and are considered to share similar characteristics (Best & Kahn, 2006). This design was chosen as it would be convenient and reliable to answer the research questions for this research. For example, to answer the research question to what aspects of writing do secondary school students have most problem, it is much easier use the quasi-experimental research design as the researchers could just use the intact groups as they already exist in the school.

The researchers engaged in the research for nine weeks. In the first week, the researchers administered the pre-test for the narrative essay for both groups. Then, three weeks were allocated to brief and expose the students and the teachers on 'Grammarly' grammar checker which were used in the research as a treatment for the experimental group. Four weeks were then allocated for the execution of the online grammar checker 'Grammarly' for the experimental group in their writing lessons, and the conventional method of writing instruction was done for the controlled group. The final one week was used to administer the post-test. Table 2 is the time frame on the research procedure.

TABLE 2: RESEARCH PROCEDURE

Week	Procedure (n=60)	Conducted by
1	1. Writing test (pre-test) for both groups	Teacher/researcher
2	1. Briefing teachers and students on 'Grammarly' (Experimental group) in writing narrative essays 2. Briefing teachers and students on the traditional/common method of writing narrative essays	Researchers
3-8	Treatment of Grammarly (experimental group) and traditional/common method in writing a narrative essay (control group)	Teacher/Researcher
9	1. Writing test (post-test) for both groups	Researcher/Teacher

VI. RESULTS AND FINDINGS

The present study investigates whether the use of grammar checker, i.e., Grammarly, improves the narrative writing skills among form 4 students in a public secondary school in a state in the west coast of Peninsular Malaysia. The specific objectives of the study are to identify the weaknesses faced by the students in writing essays, discover the possible benefits obtained by the students when using the grammar checker, and identify the issues of using Grammarly in writing English narrative essays (if any).

A paired t-test was conducted to indicate the difference in errors done by the students in both experimental and controlled group.

TABLE 3: RESULTS OF PAIRED T-TEST FOR THE DIFFERENCES OF THE PRE AND POST-TEST FOR THE EXPERIMENTAL AND CONTROLLED GROUP

	Pre-test n=30		Post-test n=30		t-test	Sig 2-tailed
	M	SD	M	SD	t	p
Experimental	32.9000	6.21095	33.833	5.49660	-4.065	.000
Controlled	30.9667	4.15629	31.3000	4.07812	-2.0625	.048

The results of the Paired Sample T-Test show that there is a difference between the pre-test and the post-test results of the experimental group. The p value = .000 clearly indicates that the tests are both statistically significant, $t(30) = -4.065$, $p = .000$ (two tailed). The mean for pre-test is 32.90 (SD = 6.21) and for the post-test is 33.83 (SD = 5.49). The mean (M) value for pre-test is 32.90, which was the value obtained without the intervention. Once the post-test was conducted with the use of 'Grammarly', the post-test mean was 33.833. The differences between the mean values showed that the intervention used in the research was fruitful as the mean score after the use of the online grammar checker was higher, with the difference of 0.90. The result obtained showed that the intervention in this research played a role to improve students' narrative writing.

TABLE 4: PAIRED SAMPLE STATISTICS FOR EXERCISE 1 AND 2 FOR ALL THE GRAMMATICAL ELEMENTS FOR EXPERIMENTAL GROUP

	Exercise 1 n=30		Exercise 2 n=30		t-test	Sig 2-tailed
	M	SD	M	SD	t	p
SVA	14.7333	2.34790	12.3333	2.32428	10.529	.000
SS	15.0333	2.88257	12.3000	3.01891	11.417	.000
SP	12.2667	1.91065	9.1667	2.15092	12.596	.000
P	9.2667	2.21178	6.8333	2.19848	9.646	.000

Table 4 shows the results obtained from paired sample t-test done for both exercise 1 and exercise 2 by the students in the experimental group. The questions used for both exercises were past years' SPM examinations for narrative writing. This exercise were done after the pre-test and before the post-test was conducted. They were done with the exposure and help from using the online grammar checker, 'Grammarly.'

There was a statistically significant decrease in the scores for the number of errors committed for all the grammatical elements, such as subject-verb-agreement (SVA), sentence structure (SS), spelling (SP) and punctuation (P) from exercise 1 and 2. The mean score for subject-verb-agreement (SVA) in exercise 1 (M = 14.7333, SD = 2.34790) and in exercise two (M = 12.3333, SD = 2.32428) which clearly

indicates a decrease as much as 2.4. This indicates that the number of errors has decreased when compared in the first exercise to the second one. It also indicates that the online grammar checker did play its role in the enhancement of narrative writing among the students, in particular, their improved use of these grammatical aspects. For sentence structure (SS), for the first exercise and second exercise, the mean scores are with the difference or decrease of 2.73, which indicated that the students errors in sentence structure was reduced in their second exercise (exercise 1: $M = 15.0333$, $SD = 2.88257$; exercise 2: $M = 12.3000$, $SD = 3.01891$). For spelling (SP), in the first exercise and second exercise, the mean scores are with the difference or decrease of 3.1, which was quite high in value and indicated that the students errors in spelling was reduced in their second exercise (exercise 1: $M = 12.2667$, $SD = 1.91065$; exercise 2: $M = 9.1667$, $SD = 2.15092$). This shows that students have reduced their spelling errors when they attempted their second exercise. Lastly, for punctuation (P), in the first exercise and second exercise, the mean scores are with the difference or decrease of 2.4, which was quite high in value and indicated that the students errors in punctuation was reduced in their second exercise (exercise 1: $M = 9.2667$, $SD = 2.21178$; exercise 2: $M = 6.8333$, $SD = 2.19848$).

All the differences in the mean scores when comparing the first exercise and the second one indicates that the students did improve their grammatical elements which aided their narrative writing. The (p) value was .000 that indicated there was a significant difference between exercise 1 and 2. In this regards, they were exposed to the treatment, i.e., Grammarly, which aided them in giving explanations and providing examples that allow the students to rectify their errors while writing. Once the explanations for their errors are displayed, the students can click 'expand,' where more detailed explanations including the correct and incorrect sentences are also provided in detail. When the students read these explanations and take action on correcting their errors, self-directed learning takes place. At the same time, scaffolding regarding the explanation is provided by 'Grammarly' to the students to enhance on their grammatical aspects, where they continue to learn and keep constructing their learning of grammatical knowledge through the consistent use of Grammarly.

VII. DISCUSSION AND CONCLUSION

In this study, the experimental group which was exposed to the intervention, 'Grammarly' scored better in their bands of marking compared to the controlled group which was taught using the conventional method of teaching writing. The students in the experimental group improved regarding their grammatical elements (i.e., subject verb agreement, sentence structure, spelling, and punctuation) which are the essential ingredients when it comes to essay writing. Thus, the null hypothesis was rejected because there is a significant relationship between 'Grammarly' and the achievement of narrative writing among the students.

The results obtained for this study especially for both pre and post-test is similar to a study done by Nikoo Mohammadi, Bahman Gorjian and Mohammad Alipour in 2012. The research was about the effects of computer assisted language learning (CALL) approach on EFL learners' descriptive essay writing which focused on grammar and spelling checker software. The participants in the experimental group were exposed to grammar and spelling checker using Microsoft Office Word 2010. The other group was the controlled one who were not exposed to this intervention. At the end of the research, the experimental group outperformed the controlled group in writing descriptive essay. Not only that, the results from this research also comply with other studies done by Brady (1990), entitled *Computer in the Writing Classroom*; and Phinney (1991), entitled *Computer-assisted writing and writing apprehension in ESL students*, and many more. These results from these studies are quite similar to the results to this current study as there are also two groups, in which one is exposed to the intervention, and the other one was not given the intervention. For this study, the experimental group which was exposed to 'Grammarly' did show some improvement after analyzing the post-test results which indicates that Grammarly has a positive outcome on students' writing particularly regarding grammatical aspects (i.e., subject verb agreement, sentence structure, spelling, and punctuation) in their writing.

The findings of this research shed light on the application of the online grammar checker and its use in aiding the narrative writing among secondary schools students in a public secondary school in Malaysia. Seeing that the study found that grammar checkers have indicated positive outcomes on Malaysian students' narrative writing, particularly on their grammatical aspects (i.e., subject verb agreement, sentence structure, spelling, and punctuation) it is imperative for more research to look into the effects of using online grammar checkers for also primary school students as it is the stepping zone level into writing. The research can also be done in more schools or groups of students to get a more valid and concrete result to show how the online grammar checkers can help different level of students. Also, the method of research can also be varied, for example, the usage of mix mode could be applied for this issue. This is to obtain more reliable and concrete results that can indicate the effect that the online grammar checker on writing.

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