

**THE USE OF AUTOMATED WRITING EVALUATION
(AWE) IN DEVELOPING ESL LEARNERS' WRITING
PROFICIENCY**

BY

HARNIZA BINTI ABD RAZAK

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**Abd. Hamid Abu Sulayman Kulliyah of Islamic Revealed
Knowledge and Human Sciences
International Islamic University Malaysia**

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ABSTRACT

This research is an investigation on how Automated Writing Evaluation (AWE) applications facilitate writing improvement among English as a Second Language (ESL) learners. The study employed *WriteLab*, a technology-enabled innovation feedback tool which could contribute to developing English language proficiency of students through lexical, syntactical and rhetorical developments and raising grammatical sensitivity. There is a need to find possible means to increase learners' proficiency level as those who are proficient in English are more likely to have better employment and opportunities in the global arena. This study involved ESL students from Universiti Teknologi Mara Terengganu ($n=80$) who were enrolled in a writing course namely Integrated Language Skills: Writing. Both quantitative and qualitative research methods were used to conduct a quasi-experimental research as well as content analyses. Data analyses included descriptive analysis techniques, *t*-test and ANCOVA. The non-equivalent groups' pre-test/post-test design was applied to explore the overall effect of using AWE in improving students' writing in terms of lexical, syntactical, rhetorical and grammatical sensitivity developments. The treatment involved four series of essay writing tasks whereby the experimental group received the treatment (AWE) after completing each task consecutively while the control group only received teacher feedback. The findings indicate that, based on the lexical analysis conducted by using Measure of Textual Lexical Diversity (MTLD), Latent Semantic Analyses (LSA) and Academic Word List (AWL) with the aid of Coh-Metrix 3.0 and Vocabprofiler BNC, lexical diversity increased among the 40 participants who received the treatment using AWE. For the syntactical analysis administered using Mean Length of T-unit (MLTU), Mean Number of Dependent Clauses per T-unit (DC/T) and Mean Number of Complex Nominals per T-unit (CN/T) with the aid of L2 Syntactic Complexity Analyzer (L2SCA), the treatment group also showed improvement. For rhetorical development, the analysis measured by Coh-Metrix 3.0 in the aspects of Referential Cohesion, Verb Cohesion and Connectives, the findings show greater improvement performed by the treatment group in all four series of essays. The 40 participants who were in the control group and therefore did not use AWE in their writing tasks did not show greater development in their four series of essays as compared to the participants in the experimental group. For grammatical sensitivity, the result shows that the treatment group demonstrated improvement after AWE was applied. Therefore, the overall result asserts that the use of AWE (*WriteLab*) has substantial potential to complement teacher feedback in developing ESL learners' writing proficiency.

خلاصة البحث

سعى هذا البحث إلى تحديد مدى توافر التقنيات الرقمية في المدارس الابتدائية العامة و استخدامها في تدريس مادة العلوم من وجهة نظر معلمي العلوم في مدينة حائل، المملكة العربية السعودية. ركز هذا البحث أيضا على قابلية تطبيق نموذج قبول التكنولوجيا. ووضعت عينة تطبيقية عشوائية من 330 من معلمي ومعلمات العلوم (145 ذكور و 185 إناث). تم تطوير أداتين لجمع البيانات؛ كان أول أداة قائمة مرجعية ذاتية متقدمة لمعرفة البيانات المتعلقة بتوافر التقنيات والتسهيلات الرقمية في المدارس الابتدائية في مدينة حائل، المملكة العربية السعودية، وكانت الاداة الثانية عبارته عن استبيان اقتبس من ثلاث دراسات. لوحظ في النتائج أن هناك نقص حاد في توافر مرافق التكنولوجيا الرقمية في جميع المدارس الابتدائية للبنين والبنات التي شملتها الدراسة. استخدام المعلمين للتقنيات الرقمية في التعليم والتعلم يتأثر بعدة عوامل، وهي الدعم الإداري وقلق الكمبيوتر والتمتع. تفاوتت توفر وسائل التقنيات الرقمية داخل نطاق المدارس الابتدائية في مدينة حائل. ضمن وسائل التقنيات الرقمية الاثني عشرة المتناولة في هذا البحث لم تتوافر سوى أربعة منها في جميع المدارس. ويؤكد هذا البحث على أن الدعم الإداري والاستمتاع التي يشهدها المعلمون والمعلمات لديهما علاقة طردية مع متغير مدى الفائدة المرجوة فيما يخص استخدام التقنيات الرقمية. بالإضافة إلى ذلك فإنه يؤكد على أن الرهبة أو القلق من الحواسيب لدى معلمي ومعلمات مادة العلوم لها علاقة عكسية مع متغير مدى سهولة الاستخدام فيما يخص استخدام التقنيات الرقمية. وقد وجد البحث بأن النية في الاستخدام تؤثر على الاستخدام الفعلي للتقنيات الرقمية داخل المدارس الابتدائية. وجد أيضا أن مدى سهولة الاستخدام المدركة والاستمتاع يؤثران على نية معلمي ومعلمات مادة العلوم في استخدام التقنيات الرقمية في المدارس الابتدائية. بالرغم من ذلك فإنه يبدو بأن مدى الفائدة المرجوة لا يؤثر على نية معلمي ومعلمات مادة العلوم في الانتفاع من التقنيات الرقمية في المدارس الابتدائية. أظهرت هذه النتائج أن هيكلية نظرية قبول التكنولوجيا TAM تؤثر تأثير مباشر على السياقات المتعلقة بكل من الدعم الإداري والقلق تجاه الكمبيوتر والتمتع والفائدة المدركة من الاستخدام وسهولة الاستخدام المدركة ونية الاستخدام والاستخدام الفعلي للتكنولوجيا الرقمية. كذلك النتائج تدل على نجاح التمديد المقترح للنموذج في تحقيق أهداف هذه الدراسة.

APPROVAL PAGE

The thesis of Harniza binti Abd Razak has been approved by the following:

Mohd Ridwan Abdul Wahid
Chairman, Supervisory Committee

Maskanah Mohammad Lotfie
Supervisor

Ainul Azmin Md Zamin
Co-Supervisor

Zahariah Pilus
Internal Examiner

Supyan Hussin
External Examiner

Faizah Abd Majid
External Examiner

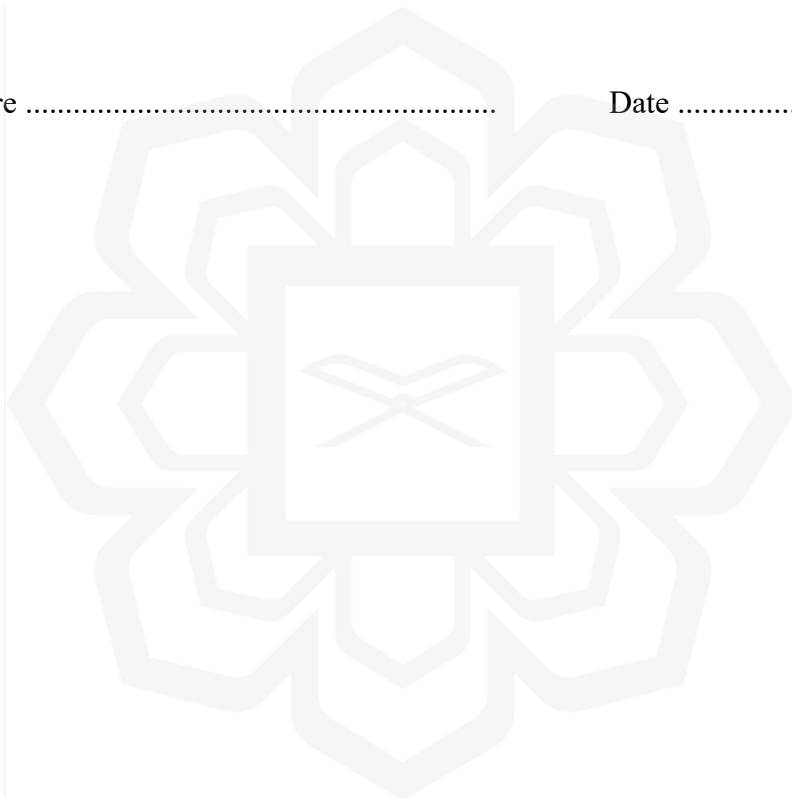
Akram Zeki Khedher
Chairman

DECLARATION

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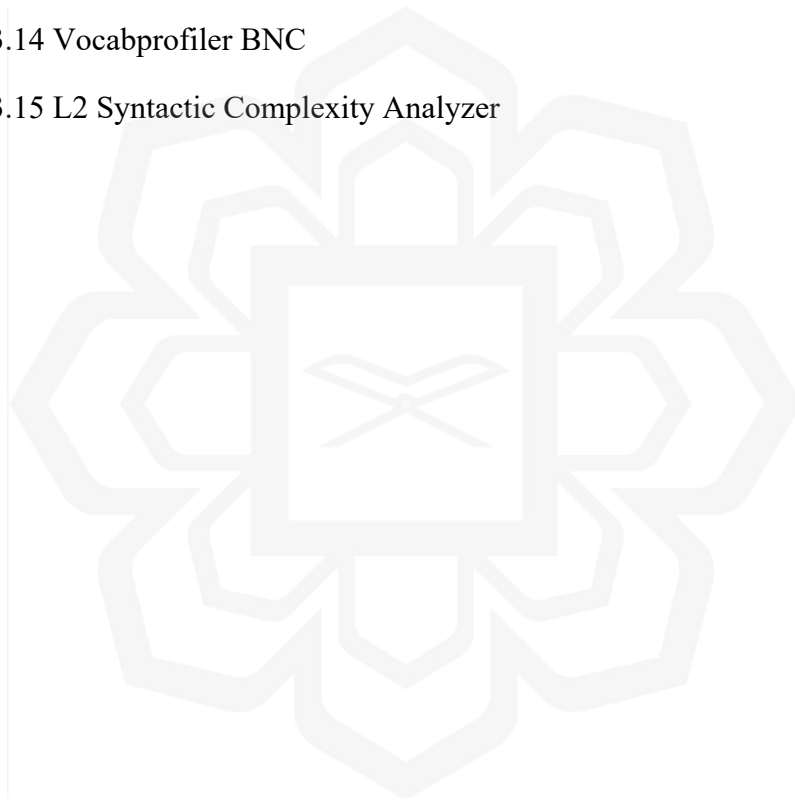
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LIST OF ABBREVIATIONS

ANCOVA	Analysis of Covariance
AWE	Automated Writing Evaluation
AWL	Academic Word List
EDA	Exploratory Data Analysis
EFL	English as a Foreign Language
ESL	English as a Second Language
ICT	Information and Communications Technology
IH	Interaction Hypothesis
LAA	Language Analytical Ability
LSA	Latent Semantic Analysis
L2	Second Language
L2SCA	L2 Syntactic Complexity Analyzer
MOE	The Ministry of Education
MOHE	The Ministry of Higher Education
MTLD	Measure of Textual Lexical Diversity
NLP	Natural Language Processing
PU	Perceived Usefulness
PEOU	Perceived Ease of Use
SLA	Second Language Acquisition
SLW	Second Language Writing
TAM	Technology Acceptance Model
TPACK	Technological, Pedagogical Content Knowledge
UiTM	Universiti Teknologi MAR

CHAPTER ONE

INTRODUCTION

The focus of this research is about English as a second language (ESL) learners taking writing course to improve their written English by using Automated Writing Evaluation (AWE) applications. By employing a quasi-experimental research design, the effectiveness of the computer-generated feedback which is known as *WriteLab* in improving ESL learners' writing is investigated. It is an online writing tool which brings in the latest developments of natural language processing and machine learning.

This chapter outlines the relevance and the need of the study by presenting its background, statement of the problem, research objectives and research questions, significance of the study, scope and limitations as well as operational definitions.

1.1 BACKGROUND OF THE STUDY

Learning English as a second language is admittedly important to fulfil the communicative demands of real-life situations. The demands are to be both proficient and competent in the language, as it is perceived as a platform for an individual to be successful in any field of work at local or international levels. Due to this justification, Malaysia, therefore, has acknowledged the importance of English among its graduates especially at the tertiary level. The Ministry of Education (MOE) for example, has taken several actions such as providing teacher training facilities, designing new syllabi and placing native English teachers at schools (Sing & Choo, 2012). Moreover, in 2012, the Malaysian Education Blueprint was presented by the Ministry of Higher Education (MOHE) to empower the

educational policy (Kadzrina & Wan Shakizah, 2015). The blueprint is an effort to strengthen values of education in Malaysia. One of the attributes which has been focused by the blueprint is bilingual proficiency. The enhancement of Malay and English proficiencies is promoted in order to achieve national education's goal. To ensure this, the transformation of classroom to keep up with technological trends has been recognized to be implemented.

There is a need of deliberate policies and actions to be instigated by the government to improve graduates' competency in English because research has shown that there is still an increasing gap between the level of competency of the graduates and the level required by employers (Isarji, Zainab, Ainol Madziah, Tunku Badariah & Mohd Sahari, 2013). A study on graduate employability in 2012 by the Malaysian government and survey findings from Malaysian employers stated that the most common problems among graduates seeking jobs were poor command of the English language (55.8%) followed by poor character/attitude or personality (37.4%) and unrealistic expected salary/benefits (33%) (Ministry of Higher Education Malaysia, 2012). In addition, Ismail, Yussof and Lai (2011) in their study on employers' perception on Malaysian graduates found that graduates need to improve soft skills, including communication skills as well as Malay and English language proficiency.

Thus, it is imperative for the graduates to possess good communication skills that comprise both oral and written competencies in English. Excellence in written and spoken English skills are ever more crucial requirements than before because both are internal and external needs of communication around the world. In fact, writing skills in the language are equally important to speaking proficiency (Zawiyah, 2005). It has been pointed out that

effective writing skills may increase students' chances for success (Alexander, 2008). Unfortunately, not all students have awareness of the importance of writing proficiently. Therefore, it is indeed important to create awareness among the students on the importance of Second Language Writing (SLW) for their future. This action should be started at a young age and as early as possible to attain the worldwide needs.

Due to its global dominance, writing in English is increasingly important. Writing skill has always been perceived as playing a big role in learning English as a Second Language context particularly. Surprisingly, Juliana (2005) found that, English for Foreign Language (EFL) students ranked writing as their least competent skill even though they regarded speaking and writing as the most important skills to master the language. For this reason, developing student writing proficiency should be a core business for the English instructors in teaching writing. It could be of significant finding to know to what extent students are proficient writers by looking at their writing development.

However, to produce quality and proficient writers is one of the most challenging tasks for teachers. Teaching and giving instructions are not the only tasks they have to perform as they must also develop strategies to bring instructional activities in line with both assessment and instructional purposes. Both teachers and students might face lack of motivation when they fail to achieve their desired outcomes in the classrooms. Thus, the use of computers and technologies as proposed in Malaysian Education Blueprint has become integral in educational settings as both teachers and students prefer to make use of these facilities to facilitate them in teaching and learning process (Hyland, 2010). The development of technology in the field of teaching and learning has opened the door for teachers to experiment the effectiveness of technology in their teaching and learning

activities. As digital natives, students are much more attracted to use technology in the classroom. The internet, for instance, provides numerous resources for teaching and learning a second language. This technology offers students opportunities to utilize a variety of learning techniques and strategies. The language learning and instruction nowadays consequently have become more fun with the existence of software and applications such as YouTube videos, wiki creation and machine tools (Wenz, 2014).

Hence, teachers can use this technology to assist them in their teaching process. In teaching writing particularly, there are software and tools which can be utilized to provide feedback for improvement. As a matter of fact, a good feedback leads to effective writing. Feedback is very important in the teaching and learning process as it facilitates improvement of the learners as writers. At the same time, the teachers can easily monitor the students' writing development by comparing the series of essays written by the students. Hyland (2003) proposes that feedback in writing could be given by providing extensive comments on students' texts to give readers responses and at the same time help them to improve and learn as writers. Feedback is a mechanism to encourage students to revise their texts and make improvement. It is also an opportunity for both students and teachers to interact.

There are indeed numerous studies which emphasize the impact of corrective feedback in ESL writing. Vaezi, Zand-Vakili, and Kashani (2011), for example, conducted a study on observational classroom research on corrective feedback. Meanwhile, some other researchers have proposed the effects of implicit corrective feedback (Ellis, Loewen, & Erlam, 2006; Li, 2010; Mackey & Goo, 2007). The major concern of the studies has focused on the written feedback provided by teachers to improve students' essays. Since

grammatical inaccuracy in students' written work has been a major problem that needs to be addressed, Lotfie and Abd Samad (2007) has conducted a quasi-experimental study on the role of noticing in improving written accuracy. The researchers applied Enhancement technique, a feedback technique that promotes noticing. The finding showed that, this feedback type is very helpful to facilitate students' writing development.

Interestingly, with the development of technologies, a modern automated system has been introduced to assist teachers to provide feedback. The system, which is known as Automated Writing Evaluation (AWE), can help learners to achieve accuracy in writing. This would help the teachers to frequently give feedback to students since the system at least will help to determine the types of errors produced by the learners in their writing, and with the teachers' help and guidance, they would improve themselves gradually. However, more research needs to be conducted to provide evidence that AWE can be an effective tool for corrective feedback in ESL writing classrooms.

Hence, there is indeed a need to conduct a study to determine the effectiveness of AWE feedback in developing ESL learners' writing proficiency. The syntactic, lexical and rhetorical development analyses are among the best mechanisms to investigate the development of the progress in achieving proficiency in their writing. Lexical, syntactic and rhetorical developments have important implications in a second language writing and English for Academic Purposes teaching. The changes in terms of linguistic features in learners' writing for example, could be analyzed in the area of lexis (Mazgutova & Kormos, 2015). Crossley and McNamara (2014) have found that there is a stage of syntactical development when the learners' noun phrase constructions become embedded and elaborated. Learners might also find that the descriptions of lexical and syntactic

characteristic features in academic writing will help them in writing, editing and revision process (Vyatkina, 2013). Rhetorical development, in addition, could measure the writers' consciousness about rhetorical features in writing.

One of the specifications offered by AWE is providing a range of digital tools for grammatical error detection. Noticeably, in teaching writing, there is a need to integrate grammar directly into writing instruction. This is due to the fact that the position of the words in a sentence structure identifies the function of each word and its relationship to the other constituents in the sentence (Gitlin, 2010). One of the best approaches to produce proficient writers is by developing Language Analytical Ability (LAA) among learners (Sams, 2003). The ability to analyze sentences in order to know how each part works together to convey meaning is important to the writing process. In fact, there should be an awareness of bringing instructional activities in line with what the writers face when putting their thoughts on paper. It is also necessary to explore what their difficulties are when dealing with organization, coherence and revision of their essays. The use of LAA approach consequently would help writers to develop a deep understanding and awareness of sentence patterns. They would also be able to see how the group of words can be moveable and replaceable (Sams, 2003). It is important to emphasize that LAA should be developed when teaching and learning writing to build learners' competency gradually. The automated machine such as AWE, therefore, can be utilized as a complementary part of exposing LAA to the students.

1.2 STATEMENT OF THE PROBLEM

Chomskyan model of linguistic theory has defined linguistic competence as an autonomous syntactic component capable of producing all grammatical sentences of a language (Nattinger & DeCarrico, 2014). Certainly, this linguistic competence is subjected to the general rules which must be acquired by L2 learners to perform linguistic ability of the language. Therefore, it is an evidence that in learning a second language, understanding the language grammar is essential because it consists structural rules which govern the language. However, many learners perceive grammar as complicated and they might take years just to master it. This will cause uncomfortable circumstances to both teachers and students especially when dealing with writing classrooms. In practice, most ESL writing instructors recognize the difficulty to produce proficient writers especially when the main barrier comes from poor English background of the learners. They are considered as struggling writers who always lack knowledge about how to be a good writer (Saddler & Graham, 2007).

English language proficiency has become an integral aspect in Malaysian higher education (Musa, Koo & Azman, 2012). However, Hiew (2012) claimed that the majority of Malaysian students are not proficient in English even upon completing the eleven years of education. When it comes to a practical part, they fail to perform greatly. The reason is that they just learn without having an awareness of how important it is to master in all language skills including grammar. Kalra (2015) clarified that most of the students are not aware of the importance of studying English for their social and cultural life. The worst scenario is when they just learn English for the sake of passing an examination. In other words, they possibly lack the motivation to learn the language as they are exposed to the