

# Exploring the Attitude of ESP Learners towards Using Automated Writing Evaluation to Assess their Writing

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Received on: 20 March 2023

Accepted on: 29 April 2023

Published on: 07 June 2023

## ABSTRACT

*The aim of the current study is to explore the attitudes of ESP learners towards using automated writing evaluation (AWE) to assess their writing. The mixed-method qualitative and quantitative approach is employed in this study. The sample of the study consisted of 201 second-year students from the College of Engineering and Technology at the Arab Academy for Science, Technology and Maritime Transport, Egypt. A post-experiment questionnaire was utilized to investigate the students' attitudes towards using AWE to assess their writing. The results of the study reveal that the students hold positive attitudes towards using the AWE software Grammarly since it encouraged them to self-correct their errors and revise their writings before submitting them to their teachers. Based on the findings of this study, it is recommended to conduct research on the pedagogical usage of AWE tools in writing classes, and the attitudes of the writing instructors towards using AWE tools in their writing classes.*

**Keywords:** Automated Writing Evaluation (AWE); Assessing ESP Writing Performance; English for Specific Purposes (ESP).

## 1. INTRODUCTION

Writing holds a special place in language teaching because it necessitates proficiency in and familiarity with the other three language skills—listening, reading, and speaking. Additionally, it necessitates the mastery of additional cognitive and metacognitive skills. Students must decide on a purpose for their writing, carefully plan it, think about its organization and logical flow, rewrite it, revise it, and so on. When writing, individuals must use cognitive skills; they must evaluate their sources before fusing them into a precise piece of writing. According to Walsh (2010), the importance of writing arises from its extensive

use in both higher education and the workplace. Students that struggle with writing will never be able to interact with teachers, employers, peers, or anybody else effectively. Writing has always been a challenging task for both teachers and students due to its sophisticated teaching and learning processes. However, the time and skill required to analyze multiple drafts of student writing impedes the teaching of second language writing and adds to the workload of the writing instructor. As a result, online Automated Writing Evaluation (AWE) applications have been created to relieve the writing instructor's workload and allow students to self-check their work before final submission.

This study, therefore, intends to investigate the attitudes of ESP students at the Arab Academy for Science, Technology, and Maritime Transport's College of Engineering and Technology in Alexandria towards using the AWE programme Grammarly to evaluate their academic writing performance.

### 1.1. Research Questions

To achieve the purpose of the study, the researcher tried to pose some research questions that may help this study to be more accurate. These questions were formulated as follows:

**Research Question 1:** How does the use of AWE affect students' writing performance?

**Research Question 2:** What are the benefits of using AWE programmes as a formative assessment tool while teaching writing to students?

**Research Question 3:** What are the students' attitudes towards using AWE tools?

### 1.2. Objectives of the Study

The objective of this study is to investigate the attitudes of ESP students at the College of Engineering and Technology at the Arab Academy for Science, Technology, and Maritime Transport in Alexandria towards using AWE software to assess and improve their writing skills. The study intends to accomplish the following goals: first, exploring the students' attitudes towards using AWE software to assess and enhance their writing performance; second, investigating the effectiveness of using AWE software on improving the writing skills of the students at the College of Engineering and Technology at the Arab Academy for Science, Technology and Maritime Transport in Alexandria; and finally, providing writing instructors with an alternative method of teaching and evaluating writing through the integration of the AWE software in their writing classes.

### 1.3. Significance of the Study

The significance of this study stems from the fact that it is the first study, according to the author's knowledge, to be undertaken in the area of English for Specific Purposes (ESP). This makes the study highly

significant for:

1. English language instructors in general and ESP instructors in particular should use effective writing teaching approaches to develop students' writing abilities and motivate them to write more.
2. Teachers should help students use AWE software to improve their writing abilities and promote independence.
3. To arouse the attention of experts and managers in organizing training sessions for instructors to hone their abilities to integrate technology into their classrooms generally and writing lessons specifically.
4. Syllabus designers should provide a variety of instructions, strategies, and activities that utilize technology to English language courses to better accommodate today's digital learners.

## 2. REVIEW OF LITERATURE

In the opinion of many teachers, writing is one of the most challenging productive skills to acquire and, thus, to teach. Writing requires meticulous accuracy due to the complex communication process involved (Hyland and Hyland 2006). Because human error can occur when providing feedback to students, it can be challenging to identify the same written issue, leaving students perplexed about the feedback they receive from their teachers (Lavolette 2015; Zhang 2016; and Ranalli 2018). For language teachers, to be able to give proper instructional feedback that includes details on degrees of accuracy as well as strategies for progress, the learners' results are crucial (Shim 2013). However, instructional feedback may result in a procedure that places an enormous burden on teachers (Warschauer and Grimes 2008; Chapelle, Cotos, and Lee 2015; Wilson and Czik 2016).

Therefore, numerous studies on students' attitudes towards using AWE programmes as a tool to help students improve their writing skills have been carried out over the last ten years in an effort to lessen the enormous workload that teachers must do to provide instructional and individual feedback.

## 2.1. Approaches to Teaching Writing

An approach is a way of thinking about how teaching and learning are related to one another. Any strategy for teaching a language is underpinned by a theoretical understanding of what language is and how it may be learned. An approach is the starting point for procedures, or the way something is taught, using techniques or classroom activities to aid in student learning. The product approach and the process approach are the two basic approaches that are consistently distinguished when teaching writing.

### 2.1.1. The product-oriented approach to writing

The term is most frequently used to refer to focusing on the requirements of the final text that the writer must produce. In this method, a model text is presented, examined, and used as the basis for a task that results in the creation of a text that is comparable to that task. Writing is seen as an output of "combinations of lexical and syntactic forms, and good writing as the evidence of knowledge of these forms and of the rules employed to generate texts," according to the classic oriented-product perspective (Hyland 2003a, 4). Writing instructors that advocate this method place a lot of emphasis on formal correctness and precision at the sentence level or paragraph level (Silva 1990). They concentrate on imparting formal writing skills including vocabulary, grammar, cohesiveness, coherence, etc. They view writing as "an extension of grammar—a way to measure learners' capacity to construct coherent sentences and reinforce language patterns through habit development" (Hyland 2003a, 3). Students must follow precise models to produce parallel writings, as illustrated in figure 1 by Robinson (1991).

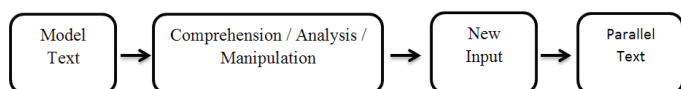


Figure 1. A model-based approach to teaching writing

### 2.1.2 The process-oriented approach to writing

The model-based, overly-simplistic product approach, which only focuses on the final result, gave rise to the process approach. The process approach views writing as a task that involves both

thinking and writing to solve an issue. This method is related to Flower's (1985) work, who taught pupils how to recognize a rhetorical problem—or simply the school assignment—find a solution to, and then reach the proper conclusion. The process stage, on the other hand, necessitates breaking the plan down into sentences and paragraphs, editing the initial draft, and then creating a number of subsequent revisions. However, in practical instruction, peer review is used to teach the skills of editing and evaluating. Figures 2 and 3 show how Robinson (1991:104) characterizes the thinking stage and the subsequent writing stages.

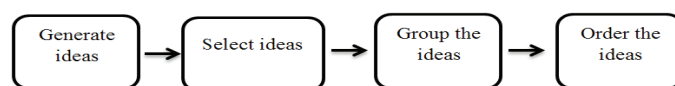


Figure 2. The subsequent thinking stage of writing

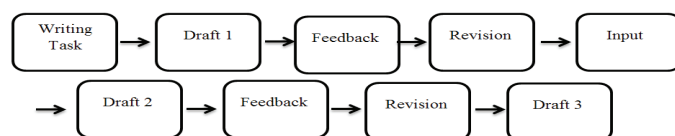


Figure 3. The subsequent writing stages of writing

It is also crucial to note that the cognitive writing model, created by Flower and Hayes in 1981, is the most well-known and significant process model in the fields of psychology and education (Graham 2006). As depicted in figure 4 by Flower and Hayes (1981), writing requires the interaction of three essential elements, including the work environment, the writer's long-term memory, and the writing processes (1981).

The expanding text and the rhetorical difficulty, two elements that are "beyond the writer's skin," are part of the task environment (Flower and Hayes 1981, 369). The topic, the rhetorical situation, and the audience are referred to as the rhetorical problem or the school assignment, which acts as a writing constraint that aids authors in efficiently solving the problem and responding to the writing assignment. The second element of the task environment emerges when authors move forward with solving the rhetorical problem through writing and begins to have a considerable influence on writers' decisions. It is the expanding written text itself since "each word in

the growing text determines and limits the choices of what can come next" (Flower and Hayes 1981, 371). Writers use their long-term memory, where they have knowledge of the topic, the audience, and numerous writing plans, to deal with the rhetorical problem of the expanding text (Flower and Hayes 1981, 369).

The writing processes, which are governed by a monitor, the master process that enables authors to track their present process and progress, are the third element in Flower and Hayes' (1981) model. These

processes include planning, translating, and reviewing (Hayes 2012). Writers go on to the second procedure, translation, where they start working on the first draft after developing a straightforward plan. They focus on putting ideas down on paper during this process rather than worrying about the intelligibility of their words. After the reviewing process is finished, writers rewrite their first drafts to make any necessary modifications and ultimately better their writing. However, revision cannot be viewed as a distinct writing step but rather as a thinking process (Flower and Hayes 1981, 376).

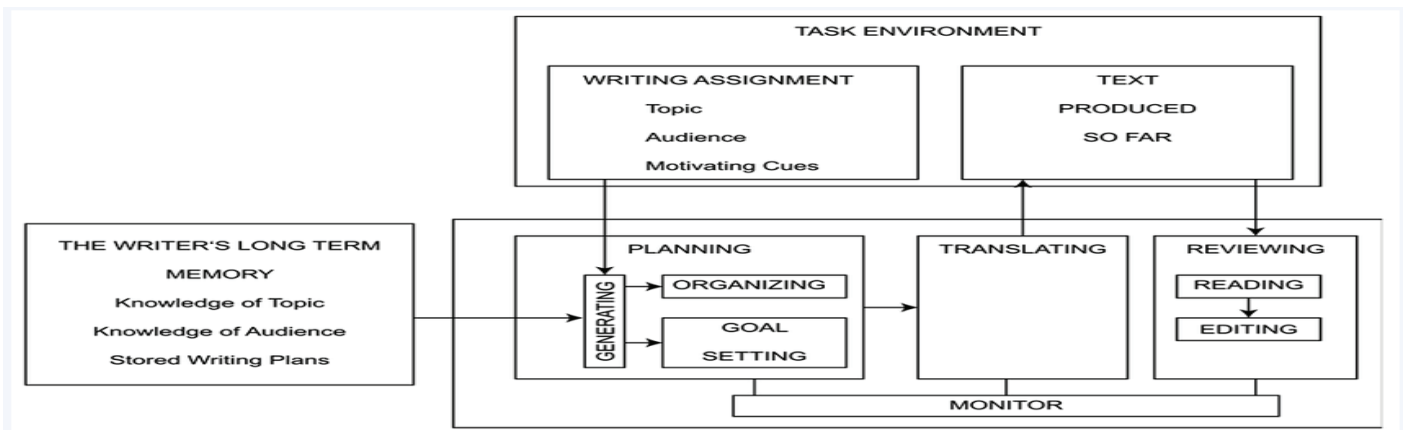


Figure 4. Flower and Hayes' Cognitive Process Model  
Source: (Hayes 2012, 371)

This process-oriented approach's exclusive concentration on writing processes has also faced some criticism. Some claim that this inductive method of teaching writing should not be used with all students (Horowitz 1986). Since teachers do not explicitly instruct students on the structure of the various target texts, students are left to discover appropriate forms on their own while writing, drawing on their "growing experience of repetition" and on "suggestions in the margins of their drafts" (Hyland 2003b, 19).

The process writing method put forward by Flower and Hayes (1981) was revised to solve these issues. Hayes (2012) modified the 1980s-writing model and addressed both criticisms of the original model after several years of empirical study and borrowing from the work and theories of other writing scholars. In truth, Hayes and his collaborators have presented several writing models over the course of more than 30 years, with this being the most recent (Hayes and Olinghouse 2015, 481).

This most recent model has three levels as shown in figure 5. The writing act is shaped and guided by factors at the control level. The process level is composed of both internal and external factors. It discusses the mental operations required for writing as well as how the social and physical environment affects those operations. Features that are essential for writing as well as other human jobs are included in the resource level (Hayes and Olinghouse 2015).

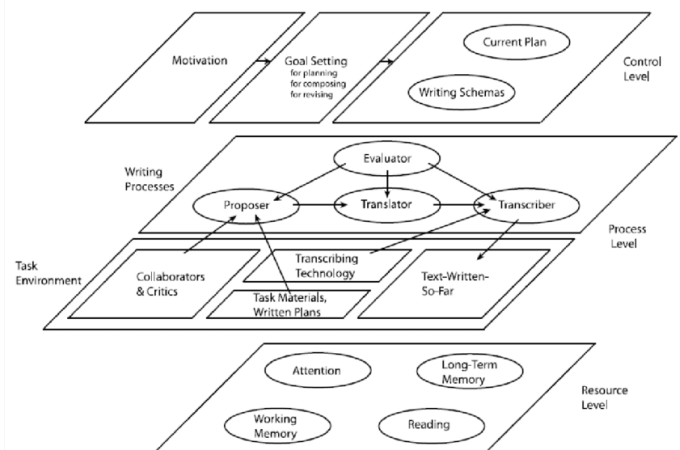


Figure 5. Hayes' (2012) updated 1980s- writing model  
Source: (Hayes 2012, 371)

## 2.2. Assessing Writing

Writing is one of the language abilities that can be most improved by frequent writing and appropriate and immediate feedback, according to Burstein, Chodorow, and Leacock (2004). In order to build computer programmes that can evaluate and offer feedback on writing skills, several studies have been done. Due to recent technological advancements like the AWE computer programme, which supports teachers and provides students more freedom and planning time to boost motivation, these verification processes are now automated (Shim 2013). Therefore, there has been an upsurge in the usage of AWE as a teaching tool that can deliver high-level feedback and writing quality (Wang, Shang and Briody 2013). Therefore, a deep and rigorous look at AWE programmes, their functions as well as their benefits and drawbacks is required.

## 2.3. Automated Writing Evaluation

Since 1960, automated evaluation tools have been developed to speed up the marking of written assignments and to help instructors provide feedback on their students' essays (Wilson and Czik 2016). The adoption of the Common Core Standards in the USA and its emphasis on standardized testing has resulted in a thriving market for computer-based testing solutions. For instance, the Intelligent Essay Assessor from Pearson graded about 34 million student essays for state and federal exams in the United States in 2017 (Smith 2018). Since the mid-1990s, there has been a significant advancement in the tutoring of intelligent language systems and the development of early software that has the potential to evaluate writing aspects due to the involvement of artificial intelligence technology in the process of natural language (Chen and Cheng 1997). Several studies have shown that AWE programmes have many features that can be useful for writing instructors as well as students.

One of the most important features of AWE programmes is being an interactive learning platform. Most AWE programmes include built-in and "customizable prompt" (Palermo and Wilson 2020) for a writing teacher to assign as well as a variety of

formats for the instructor to deliver comments, such as the general comment in the macro view and text-embedded comment in the micro perspective. Another important indicator of the AWE system's potential and effectiveness is how users see its use (Wilson and Roscoe 2020). Since students make up the majority of users, researchers frequently concentrate on examining students' perceptions. Overall, students have a favourable opinion of automated scoring systems and valid artificial intelligence feedback (Roscoe et al. 2017; Ranalli 2018). However, the accuracy of the automated feedback they receive—which is positively connected with users' perception—largely determines how they perceive it. On the other side, students may feel the interaction with an artificial intelligence rater lacks social human interaction due to the apparent inaccuracy of the automated feedback (Wang, Shang, and Briody 2013) and poor uptake rate (Liu and Kunnan 2016). On a deeper level, nevertheless, several academics claimed that these events corroborate the AWE programme's combination of instructor feedback and classroom instruction. Zhang (2020) discovered that students' unfavourable responses to automated feedback may not necessarily indicate that they have not benefited from adopting AWE. After obtaining automated feedback, students' writing displays a greater level of correction capacity, according to a meta-process for screening computerized input.

Another important feature of AWE programmes is that students may independently utilize them outside of class. Saricaoglu and Bilki (2021) examined the effects of students' voluntary use of the AWE-Criterion on their revision practice outside of the classroom using two different courses (i.e., Introduction to Sociology (IS) and Introduction to Education (IE)) at a private Turkish university because the AWE programme may be used by students on their own outside of the classroom. Teachers' attitudes affected the use of the Criterion without any teacher oversight, which is consistent with earlier findings (see Roscoe et al. 2017; Li, Link, and Hegelheimer 2015). Additionally, by comparing students' error reduction rates for the first and final drafts of each assignment as well as between the two tasks, the high usage group



(IS) also significantly improved in a number of areas, which suggests that the Criterion's high usage rate has the potential to significantly improve students' grammar revision ability. This is in addition to the significant decreases of four error types that were observed in the low usage group-IE (i.e., Subjective-Verb agreement, Possessive, Missing Article, and Missing Comma). It is also important to note that the Criterion's mistake categories were used, and that different reasons for the findings are frequently connected to the Criterion's automated feedback's reliability (Chapelle et al. 2015).

Numerous studies that support the usage of AWE have shown how these programmes can improve three-dimensional writing ability. First, word processing makes it easier to edit and revise grammar and spelling, pointing out students' mistakes and offering correction recommendations, increasing learners' writing awareness (Wang and Wang 2015). Second, software for correcting errors enables students to recognize their errors right away and professors to have direct conversations with their students about errors and feedback (Shim 2013). Additionally, automatic feedback directs students' attention to sentence-level issues, motivating them to correct incorrect usage and increase their capacity to spot and reformulate errors when no human assistance, such as a teacher, is available, fostering autonomous learning (Wang 2013). Third, artificial technology systems promise to be more objective and accurate when grading standardized essay tests, as human markers in a normal test score may differ by a few points, necessitating the need for a third marker to reach a final grade agreement (Warschauer and Grimes 2008). Depending on the student's demands and background, human input is also adaptable and constrained. Modern AWE systems use Latent Semantic Analysis (LSA), a technique that evaluates the semantic meaning of terms used in essays. As a result, the AWE can check large groups of essays and correctly score them (Khoii and Doroudian 2013).

#### 2.4. *Benefits and Limitations of Grammarly*

The AWE programme used in this investigation is Grammarly. When using its service, it offers two sorts of checking options: free checking and premium checking. Free-Grammarly checks for 150 different types of problems, including grammatical, wordiness, conjunction, spelling, punctuation, word choice, style, and even tone. The version used in this study, Free-Grammarly, includes all the key elements that students can use to check their writing without adding to their financial burden or that of the Arab Academy, where the study was done, by having to pay for the premium version. On the other hand, Premium-Grammarly is an upgraded version of the programme that includes over 400 checks and features, such as vocabulary enhancement suggestions, plagiarism detection, and citation suggestions.

Using the Technology Acceptance Model (TAM), Cavaleri and Dianati (2016) analyzed how Grammarly, the AWE software employed in this study, is perceived by students who generally reported that Grammarly's explanations made it easier for them to understand grammar rules. Although portable, grammar books and exercises on photocopied handouts lack the one-on-one interaction with students that online grammar checkers might offer. Additionally, Grammarly's comments prompt contemplation on grammar that might not have otherwise happened (Calvarleri 2016, 233). According to O'Neil and Russell's (2019) mixed method exploratory study, which compared responses from students receiving feedback from Grammarly and students receiving feedback from the teacher, students using Grammarly responded more favorably and enjoyed AWE significantly more than students receiving feedback from the teacher. The researchers also stated that both groups were satisfied with the feedback they received, but the Grammarly group was substantially happier. O'Neil and Russell (2019) discovered a flaw in AWE connected to the inaccuracy of some input, and they recommend that more research be done to determine the most common errors that Grammarly misses or misidentifies.

### 3. METHODOLOGY

The purpose of the study is to explore the attitudes of the students towards using AWE to assess their writing. The study, therefore, employed a qualitative, quantitative and exploratory approach.

#### 3.1. Research Design

This study uses a mixed-methods qualitative and quantitative approach. The reason why this method was specifically utilized is because it appropriately suits the objectives of the study, which are to examine students' attitudes towards using the automated writing evaluation tool Grammarly during the third term of writing technical reports at the College of Engineering and Technology at the Arab Academy for Science, Technology, and Maritime Transport in Alexandria. The use of a mixed-method approach is justified because the quantitative analysis of the students' writing samples from the Grammarly reports will provide answers to the first and second research questions, which are whether using AWE software affects students' writing performance and the advantages of doing so. On the other hand, the qualitative data drawn from the students' post-experiment questionnaires will help to reveal the students' attitude towards using the AWE tool Grammarly (i.e., the third research question). This means that the numerical data obtained are analyzed qualitatively.

The research also takes an exploratory approach and uses an inductive methodology. It contrasts the writing of the students before they used Grammarly to self-correct their writing with their writing after using it and after implementing all the programme's correction recommendations. So, at the end of the study, a conclusion is made on whether the students' writing performance has improved because of utilizing Grammarly. The results of the post-experiment questionnaires show that the students have positive attitudes towards using Grammarly to improve their writing.

#### 3.2. Sampling Strategy

The type of sampling strategy selected for this study is the non-probability. The non-probability sampling technique, unlike probability sampling one, utilizes the nonrandomized methods to collect the sample. The non-probability sampling method involves judgment. Instead of choosing participants randomly, participants are selected because it is easy to reach them. The researcher obtained the convenience sample from the Engineering students, all engineering majors, at the Arab Academy for Science, Technology and Maritime Transport in Alexandria. This method is particularly utilized because the subjects required for this study were conveniently available. When compared to its counterpart, this method of sampling is considered less expensive, less complicated, and easy to apply.

#### 3.3. Sample and Tools of the Study

The study enrolled 201 term-three, second-year engineering students who were studying Technical Report Writing (TRW). The subjects are 148 males and 53 females, 190 Egyptians and 11 non-Egyptians, and they are from all engineering departments, including Computer Engineering, Mechanical Engineering, Construction and Building, Civil Engineering, Industrial Management, Oil and Gas, Electric Engineering and Communications and Electronics. The experiment took place in the College of Engineering and Technology at the Arab Academy for Science, Technology, and Maritime Transport in Alexandria during the third term, in October 2021 and lasted for the whole term, 16 weeks. The participants are students from different writing classes, and they are taught by different teachers. Ethics approval as well as informed permission from all participants were granted before the experiment began.

It was the first time for the students to use AWE software in general and the software Grammarly in particular in their writing classes. Participants were informed that they would use Grammarly in two of their writing workshops. The students were given curriculum-related topics to write their compositions which were then uploaded to Grammarly to be corrected. The students sent both their original and

corrected writings to their instructors as well as the researchers. The first and final drafts were analyzed by the researchers to verify whether the software was useful in helping students self-correct their writings and hence improving their writing skills. At the end of the experimentation, 201 of the participants responded to the questionnaire to obtain information regarding their attitudes towards using the AWE tool to assess and enhance their academic writing performance.

In order to collect the necessary data for this study, the students' writing samples, both before and after using Grammarly, coupled with their automatic reports and feedback collected from the software Grammarly, as well as the end-of-experiment questionnaires, are the two key instruments employed in this study.

### 3.4. Study Procedures

The AWE tool Grammarly is used in all Technical Report Writing (TRW) classes at the Arab Academy for Science, Technology, and Maritime Transport in Alexandria in the third term, which begins in October 2021 and lasts for 16 weeks, during which students must submit their writing assignments. The tool is used for an entire semester. The major goal of the AWE implementation is to assist students improve their writing skills by allowing them to auto-correct their work and reducing the workload of writing instructors, giving them more time to deal with more complex writing issues that the programme cannot detect.

Before the writing lessons started, the researchers sent the writing instructors a video that explains the functions of the programme Grammarly as well as how to use it and how to submit work. The writing instructors then showed the video to their students. The video demonstrates how to operate every feature of the software as well as how students can submit and edit their own writing. It is also advised that both the instructors and the students spend more time getting familiar with the features of the programme.

Then, in the first class, the instructors gave a brief tutorial on how to use the tool, let the students know they had to use the AWE tool Grammarly for the duration of the semester on every written assignment,

and got their permission to use their writing samples for this study. The initial drafts, written without the aid of the software, and the final document, written after using the software to self-edit the students' papers, were to be submitted via email to the researchers and students' teachers, respectively. While utilizing the AWE tools, teachers instructed students to edit their writing as many times as they wished before turning it in to their teachers and the researchers.

This means that AWE applications will be used for formative evaluation, which is giving students feedback on their writing that is not assessed so they may fix their mistakes and gain more autonomy. The summative evaluation will be based on the input from the teachers. The teachers' workload will be reduced as a result, freeing them up to concentrate on other, more difficult writing assignments that the programme cannot handle. The instructor provides the students with final feedback on their writing, highlighting the issues that AWE software cannot resolve. Students were told to use the automated feedback to help them develop their organizational, grammatical, and language abilities. Thus, the teachers' workload for corrections will be reduced, allowing them to devote more time to instruction.

## 4. FINDINGS AND DISCUSSION

Many of the students who participated in the experiment found using AWE Grammarly in writing sessions to be appealing, according to the descriptive statistics of their responses to the post-experiment surveys (questions 1-15). Most individuals have positive attitudes towards using the AWE software Grammarly. The majority of participants said that AWE Grammarly's features were helpful. These characteristics supported them in identifying and correcting mistakes in spelling, punctuation, grammar, etc., which helped them write more effectively in general. Additionally, the findings of this study about the views of the participants towards using the AWE programme Grammarly are consistent with those of Warschauer and Grimes' (2008) study, which revealed that utilizing the AWE tools increases students' motivation for writing.



Table 1 shows that the majority of students revise essays using Grammarly before submission (mean=1.78). Only a few students, 22.4%, did not do that.

*Table 1: Students' attitudes towards revising essays using Grammarly*

Q1		Frequency	Percent	Mean	Std. Deviation	T	Df	Sig. (2-tailed)
Valid	Yes	156	77.6	1.78	0.418	60.258	200	.001
	No	45	22.4					
	Total	201	100.0					

Table 2 shows that on average the majority of participants revised their essays once or twice using Grammarly before submitting them to their teacher (mean=2.10). Very few of them revised their essays more than five times, and only (10.9) of the participants did not revise their essays using Grammarly before submitting them to their teachers.

*Table 2: Number of times Students revise their essays using Grammarly*

Q2		Frequency	Percent	Mean	Std. Deviation	T	Df	Sig. (2-tailed)
Valid	More than five times	11	5.5	2.10	0.651	45.819	200	.001
	Three to four	21	10.4					
	Once or twice	147	73.1					
	Never	22	10.9					
	Total	201	100.0					

Table 3 indicates that 52.2% of the participants think that grammar is the most useful area in Grammarly, 18.9% think punctuation is the most useful area, 17.9% of them think that wording is the most useful area, and 10.9% of the students think that transitions is the most useful area.

*Table 3: Students' most useful area in Grammarly*

Q3		Frequency	Percent	Mean	Std. Deviation	T	df	Sig. (2-tailed)
Valid	Grammar	105	52.2	2.97	1.210	34.746	200	.001
	Transitions	22	10.9					
	wording	36	17.9					
	punctuation	38	18.9					
	Total	201	100.0					

Table 4 indicates that most of the participants frequently used, or half the time used Grammarly to correct punctuations and format errors (mean=2.80), whereas only few of the students, 13.9%, never used the programme to correct punctuations and format errors.

*Table 4: Number of times students use Grammarly to correct punctuation and format errors*

Q4		Frequency	Percent	Mean	Std. Deviation	T	Df	Sig. (2-tailed)
Valid	frequently used	62	30.8	2.80	1.031	38.444	200	.001
	half the time	64	31.8					
	seldom used	47	23.4					
	never used	28	13.9					
	Total	201	100.0					

Table 5 shows that a high percentage of students frequently used, or half the time used Grammarly to correct spelling errors (mean=2.61), while only 22.4% of them never used the programme to correct spelling errors.

*Table 5: Number of times students use Grammarly to correct spelling errors*

Q5		Frequency	Percent	Mean	Std. Deviation	T	Df	Sig. (2-tailed)
Valid	frequently used	60	29.9	2.61	1.131	32.621	200	.001
	half the time	48	23.9					
	seldom used	48	23.9					
	never used	45	22.4					
	Total	201	100.0					

Table 6 shows that a high percentage of students frequently used, or half the time used Grammarly to correct grammar errors (mean= 3.08), while only 8% of them never used the programme to correct grammar errors.

*Table 6: Number of times students use Grammarly to correct grammar errors*

Q6		Frequency	Percent	Mean	Std. Deviation	T	df	Sig. (2-tailed)
Valid	frequently used	87	43.3	3.08	0.971	44.946	200	.001
	half the time	59	29.4					
	seldom used	39	19.4					
	never used	16	8.0					
	Total	201	100.0					

Table 7 shows that a high percentage of students frequently used, or half the time used Grammarly to correct wording (mean= 2.73), while only 19.4% of them never used the programme to correct their wording errors.

*Table 7: Frequency of using Grammarly to improve wording*

Q7		Frequency	Percent	Mean	Std. Deviation	T	df	Sig. (2-tailed)
Valid	frequently used	66	32.8	2.73	1.118	34.576	200	.001
	half the time	53	26.4					
	seldom used	43	21.4					
	never used	39	19.4					
	Total	201	100.0					

Table 8 indicates that more than half of the participants frequently used, or half the time used AWE software to improve their essay content and structure (mean=2.56), while 23.4 % seldom used or never used the AWE software to improve their essay content and structure.

*Table 8: Frequency of using Grammarly to improve essay content and structure*

Q8		Frequency	Percent	Mean	Std. Deviation	T	df	Sig. (2-tailed)
Valid	frequently used	52	25.9	2.56	1.113	32.585	200	.001
	half the time	55	27.4					
	seldom used	47	23.4					
	never used	47	23.4					
	Total	201	100.0					

Table 9 indicates that the majority of students feel that they have made some progress in their writing skills during the term under study due to using Grammarly (mean=1.95), whereas only 17.4% of the students feel that they have not made progress.

*Table 9: Students' attitudes towards making progress in writing due to using Grammarly*

Q9		Frequency	Percent	Mean	Std. Deviation	T	Df	Sig. (2-tailed)
Valid	Great	24	11.9	1.95	0.540	51.038	200	.001
	Some	142	70.6					
	No	35	17.4					
	Total	201	100.0					

Table 10 shows that after using Grammarly, 38.8% of participants have made the greatest progress in grammar, 21.4% of them have made the greatest progress in word choice, 16.9% of them have made the greatest progress in use of punctuation, 9% of the students have made the greatest progress in structure, 8% in spelling and 6% in ideas and content (mean=2.71).

*Table 10: Students' greatest progress after using Grammarly*

Q10		Frequency	Percent	Mean	Std. Deviation	T of the	df	Sig. (2-tailed)
Valid	A. choice of words	43	21.4	2.71	1.495	25.706	200	.001
	B. grammar	78	38.8					
	C. spelling	16	8.0					
	D. use of punctuation	34	16.9					
	E. structure	18	9.0					
	F. ideas and content	12	6.0					
	Total	201	100.0					

Table 11 indicates that most of the participants, 56.7%, think that the teacher helps them most in writing through a term's study, 27.9% think that feedback from Grammarly helps them most in writing through a term's study, 10.9% think that classroom helps them most in writing through a term's study, and only 4.5% think that peer feedback helps them most in writing through a term's study (mean=3.08).

*Table 11: What helps students most in writing?*

Q11		Frequency	Percent	Mean	Std. Deviation	T	Df	Sig. (2-tailed)
Valid	A. feedback from Grammarly	56	27.9	3.08	0.751	58.156	200	.001
	B. teacher	114	56.7					
	C. classroom	22	10.9					
	D. peer feedback	9	4.5					
	Total	201	100.0					

Table 12 shows the features that the students like most when using the software Grammarly. It is found that 17.91% of students liked the ease of usage and ability to correct mistakes, 9.95% liked the feedback they received on their writing skills, 8.46% liked correcting their grammar errors, 7.96 liked the way it improved their

grammar, 6.97% liked the instant recognition and correction of mistakes, 5.47% liked how it helped improve skills and the essays they have written, 4.48 liked the way it helped their punctuations without the need to revise, 5.47% liked how it pointed out their mistakes, 3.48% liked how it corrected all aspects of report, 3.48 liked how it gave suggestions of the more accurate writing, 2.99% liked the correction of punctuation, 2.49% liked how it was quick in evaluation, 1.49% liked how it helped them pay more attention to punctuation, 1.49% liked how it made their job easier and saved a lot of time, and 1% liked the way it helped at revision before submission.

Table 12: Features students like most in Grammarly

Q12 Statements	Count	
	Frequency	Percent
ease of usage and ability of correct mistakes	36	17.91
it gives suggestions of the more accurate writing	7	3.48
it gives me feedback about my writing skills	20	9.95
it corrects grammar errors	17	8.46
instantly recognizing mistake and correcting them	14	6.97
it improves my grammar a lot	16	7.96
it helps my punctuations without the need to revise	9	4.48
it points out my mistakes	8	3.98
the correction of punctuation	6	2.99
it is quick in evaluation	5	2.49
it helps improve skills and the essay I have written	11	5.47
help me pay more attention to punctuation	3	1.49
corrects all aspects of report	7	3.48
helps at revision before submitting	2	1.00
makes my job easier and save a lot of time	3	1.49
<b>did not answer</b>	37	18.41
<b>Total (n = 201)</b>	201	100.00

Table 13 shows that the majority of the participants did not have any suggestions or experiences to share after using the software Grammarly.

Table 13: Students' experiences and suggestions after using Grammarly

Q13 Statements	Count	
	Frequency	Percent
we can add voice correct	2	1.00
learning some writing skills in short time	6	2.99
it just needs to be more accurate	9	4.48
other websites can also help	8	3.98
it should focus more on writing skills	7	3.48
we should search for better information from more than one place	5	2.49
English should be simple	3	1.49
<b>did not answer</b>	161	80.10
<b>Total (n = 201)</b>	201	100.00

Table 14 shows that the majority of students did not answer the question.

*Table 14: Students' attitudes towards replacing writing instructor with Grammarly*

Q14-YES Statements	Count	
	Frequency	Percent
using AWE is pleasant	1	0.50
can revise the structure and words within seconds	3	1.49
it gives feedback more than enough	2	1.00
did not answer	195	97.01
<b>Total (n = 201)</b>	<b>201</b>	<b>100.00</b>

*Table 15: Students' attitudes towards replacing writing instructor with Grammarly*

Q15- NO Statements	Count	
	Frequency	Percent
teacher explains why a mistake is made	29	14.87
face to face teaching is better and cannot be replaced	27	13.85
because it is not 100% accurate	9	4.62
I can communicate with my teacher verbally and discuss issues	4	2.05
both are helpful	8	4.10
teachers might have advice to improve content and ideas	21	10.77
discussion of mistakes makes the information stick to my brain	8	4.10
teachers could correct speaking and spelling	7	3.59
human interaction is needed in learning	30	15.38
teachers can understand the topic better	11	5.64
I trust my teacher more than a website	10	5.13
the teacher's feedback is more important	24	12.31
teacher is more flexible	1	0.51
<b>did not answer</b>	<b>6</b>	<b>2.99</b>
<b>Total (n = 195)</b>	<b>195</b>	<b>99.91</b>

Table 15 shows that 14.87% of participants think that AWE software Grammarly cannot replace the teacher in providing feedback as the teacher can explain why the mistake is made, 15.38% think that human interaction is needed in learning, 13.85% think that face to face teaching is better and cannot be replaced, 12.31% think that the teacher's feedback is more important, 10.77% think that teachers might provide advice to improve content and ideas, 5.64% think that teachers can understand the topic better, 5.13% think that they trust their teacher more than a website, 4.62% think that AWE tool is not 100% accurate, 4.10% think that both are helpful, 4.10% think that discussion of mistakes make the information stick to their brain,

3.59% think that teachers could correct speaking and spelling, 2.05% think that they can communicate with their teacher verbally and discuss issues, 0.51% think that teacher is more flexible, and 2.99% of the participants did not answer the question.

The study investigated the effects of using the AWE software Grammarly on the writing of the second-year students at the College of Engineering and Technology at the Arab Academy for Science, Technology and Maritime Transport in Alexandria, as well as the students' attitudes towards using the AWE software Grammarly in assessing their writing. The scores provided by the AWE software Grammarly before



and after using the software to correct the students' writing errors were compared. Additionally, the types and numbers of the error messages detected by the AWE software Grammarly in the students' writings were categorized. Finally, the results are presented according to the research questions. (1) How does the use of AWE tools affect the ESP students' writing performance? (2) What are the benefits of using AWE tools as a formative assessment tool while teaching writing to ESP students? (3) What are the students' attitudes towards using AWE tools?

To answer the first research question, i.e., how does the use of AWE tools affect the ESP students, writing performance? The students, writing samples along with the reports and the scores obtained from the AWE software Grammarly, before and after using the AWE software to correct the writing errors, were collected, and analyzed by the researchers.

According to Fowler (1985), to whom the work of the process approach is linked, the process approach of writing requires revising the first draft and then producing a number of subsequent drafts. In actual teaching, however, this skill of editing is sometimes ignored due to lack of class time, the writing instructor workload, or the students' lack of interest in writing more than one draft. The teacher's sole responsibility is to assist students in creating practical strategies for "getting started" (assisting them in locating topics, generating ideas and information, focusing, and planning structure and procedure), for drafting (encouraging them to do multiple drafts), for editing (paying attention to vocabulary, sentence structure, grammar, and mechanics) and revising (encouraging students to add, delete, change, and rearrange ideas)" (Silva 1990, 15). Additionally, students should proofread for mistakes and correct their capitalization, punctuation, and spelling errors. According to Mather and Jaffe (2002), teachers can assist their students at this stage by encouraging peer editing, the use of a thesaurus, learning how to use proofreading symbols, and other strategies.

After reviewing the hypotheses of the previously mentioned researchers, who emphasize the

importance of the drafting and editing stage, the researchers formed the idea of how to encourage students edit and produce subsequent drafts using the AWE Software Grammarly. Using the AWE software Grammarly encouraged and assisted students to do the editing and drafting step, and consequently improve their writing skills.

There is a statistically significant difference between the scores provided by the AWE Grammarly after using it by the students to correct their writing errors and the scores provided by the AWE software before using it by the students. The scores provided by the AWE software after the students used it are higher than those provided before the students used the programme. This means that the AWE tool Grammarly helped the students in several ways during the writing process, especially the editing and drafting stage. The programme assisted the students in identifying different types of errors in their writing, encouraging them to edit their first drafts by giving the students immediate feedback that enabled them to find their errors and self-correct them, and offering them possible alternatives and suggestions that can help them improve their writing performance.

The use of the AWE software was significantly useful for the students throughout their editing and drafting processes. It is, moreover, worth mentioning that the results provided in this study agree with some of the results provided in previous studies such as Parra and Calero (2019) and Nova (2018). This study, therefore, confirms the benefits of the free AWE tool Grammarly in the improvement of the ESP students' writing skills. In response to the second research question, i.e., what are the benefits of using AWE tools as a formative assessment tool while teaching writing to ESP students? The description of the statistical data indicates that the immediate feedback provided by the AWE software Grammarly helped the students enhance their writing performance and make fewer errors. The level of the students' awareness increased since word processing enables them to revise several aspects of writing, including aspects of editing, spelling and grammar errors in an autonomous way (Wang and

Wang 2015). Using the AWE software to edit their writing, helped both the writing instructors and the students become aware of several types of writing errors and how to overcome them. Using the AWE software helped the students significantly in improving their writing, and thus achieving higher scores before the final submission of their writing to their teacher for summative assessment. It also helped in reducing the writing instructors' workload in correcting piles of written drafts and focusing more on the final drafts and hence enabling them to provide students with more individualized feedback. The results found in this study also reveal that the use of the AWE software not only led to increasing the revisions of written work, but also to improving the accuracy of that work through drafts due to the corrective feedback provided by the AWE software Grammarly. Similarly, the results provided in the study of Chapelle (2008) show that the use of AWE software for formative purposes can encourage students to review their work.

To answer the third research question, i.e., what are the students' attitudes towards using AWE tools? The data obtained from the students' responses to the post-experiment questionnaires were statistically analyzed. The descriptive statistics of the students' responses to the post-experiment questionnaires regarding their experiences with using the AWE software Grammarly (section 4, questions 32–38; and section 5, question 52) reveal that using the AWE tool Grammarly in writing classes appealed to most of the participants. Their attitudes towards using the AWE software Grammarly are positive. Most of the participants found that the features available in the AWE tool Grammarly are beneficial. Those features helped participants spot and fix misspelled words, punctuation errors, imperfect grammar...etc., and hence assisted them in improving their writing in general. Additionally, the results provided in this study concerning the participants' attitudes towards using the AWE software Grammarly agree with the results found in the study that was carried out by Warschauer and Grimes (2008) which reveal that using the AWE tools increase students' motivation for writing.

## 5. CONCLUSION

The aim of the study is to find out how learners feel about using AWE software. In the Technical Report Writing (TRW) classes at the College of Engineering, AASTMT in the third term, which started in October 2021 and lasted for 16 weeks. During that time students turned in their writing projects, using the AWE tool Grammarly. The programme is utilized for the whole semester. The primary objective of the AWE implementation is to help students develop their writing abilities by enabling them to auto-correct their work and lowering the workload of writing instructors, giving them more time to deal with more complicated writing problems that computers cannot detect. 201 students made up the study's sample. AWE appeals to the students, and they responded favorably to it.

Regarding using the AWE tools in writing classes, some implications are offered for writing instructors. Language teachers should not expect AWE systems to be able to replace human teachers. AWE systems cannot detect all types of writing errors of ESP students, such as collocation errors and sentence fragments, and errors in content and organization. AWE tools still cannot examine the content or rhetorical aspects of students' writing. AWE tools fail to detect the substance and rhetorical qualities of students' writing. Only writing instructors can provide effective feedback for these and other more complex writing issues.

Based on the findings and conclusions of this study, the following recommendations are offered by the researcher:

It is recommended to conduct research on the pedagogical usage of AWE tools in ESP writing classes, the attitudes of the writing instructors towards using such tools in their writing classes, and the effectiveness of using AWE tools on the writing classes from the perspective of the writing instructors, emphasizing both the benefits and the drawbacks. Studies can also be done on the effectiveness of using AWE tools in teaching writing to students with learning difficulties.

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