College of Graduate Studies

English Department

The Impact of Utilizing Automated Essay Scoring Software on Developing Palestinian

Undergraduate Students' Writing Competencies

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Declaration

I hereby declare that I am the sole author of this master thesis and that I have not used any sources other than those listed as references. I further declare that I have not submitted this thesis at any other institution in order to obtain a degree.

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Abstract

The present study investigated the impact of utilizing automated essay scoring and feedback software on developing the writing competencies of Palestinian EFL students at Hebron University. Sixty-six English major students from three sections of Advanced Writing served as the participants of the study. The participants were divided into three groups based on the type of feedback they received—oral, written, or automated plus manual feedback. A pre-test and a post-test were used to explore if there were any statistical differences in the writing performance of all groups. Moreover, a pre-questionnaire and a post-questionnaire were distributed to the participants who received automated plus manual feedback via the automated scoring and feedback software, Criterion®, to check if there were any differences in student attitudes before and after being exposed to automated scores and feedback. Additionally, semi-structured interviews were conducted with ten participants who disclosed negative opinions in the post-questionnaire with respect to Criterion® to obtain more personalized responses. The results of the post-test revealed that written feedback lead to a significant improvement in writing performance as opposed to the remaining two types. In general, the utilization of Criterion® had a positive impact on developing students' writing skill. However, the results of the post-questionnaire showed that the majority of the participants reflected negative views with respect to software specifications and accuracy, suggesting that artificially intelligent machine learning technologies cannot replace human raters in terms of scoring and feedback writing. Thus, the researcher highlighted the importance of feedback for writing development and recommended that automated essay engines be used only as teaching aids to help enhance students' writing competencies.

ABSTRACT IN ARABIC

ملخص

هدفت هذه الدراسة إلى معرفة مدى تأثير استخدام برنامج التغذية الراجعة والتصحيح الآلي على تطوير

مهارة الكتابة لدى متعلمي اللغة الإنجليزية كلغة أجنبية في جامعة الخليل. شارك في هذه الدراسة ستة وستون

طالباً من طلبة تخصص اللغة الانجليزية حيث تم اختيارهم من ثلاثة شعب مختلفة لمساق الكتابة المتقدمة.

قُسِّم المشاركون إلى ثلاث مجموعات وفقاً للتغذية الراجعة التي تلقوها، شفوية، كتابية، أو آلية ويدوية معاً.

وتم استخدام اختبار قبلي واختبار بعدي بهدف معرفة إن كان هناك فروق ذات دلالة إحصائية في مستويات

الطلبة وأدائهم. كما تم توزيع استبيان قبلي واستبيان بعدي على المشاركين الذين تلقوا تغذية راجعة آلية

ويدوية معاً من خلال برنامج التغذية الراجعة والتصحيح الآلي (كرايتيريون) لفحص التغير في آرائهم قبل

وبعد الخضوع للتغذية الراجعة والتصحيح الآلي. كما أجريت مقابلات شبه منظمة مع عشرة مشاركين قد

كشفوا عن آراء سلبية في الاستبيان البعدي فيما يتعلق ببرنامج (كرايتيريون) من أجل التعمق في إجاباتهم

الشخصية. وأظهرت نتائج الاختبار البعدي وجود فروق ذات دلالة إحصائية لصالح المشاركين الذين تلقوا

تغذية راجعة كتابية مما أدى إلى تحسن ملحوظ في أدائهم مقارنةً بأداء المشاركين الذين تلقوا كلا من التغذية

الراجعة الآلية واليدوية معاً والتغذية الراجعة الشفوية. وعامةً كان لاستخدام برنامج (كرايتيريون) تأثير

إيجابي على تطوير مهارة الطلبة الكتابية. إلا أن آراء غالبية المشاركين في الاستبيان البعدي كانت سلبية فيما

يتعلق بمواصفات البرنامج ودقته في تحديد الأخطاء. مما يشير إلى أن تقنيات الذكاء الاصطناعي والتعلم

الآلي لا يمكن أن تحل مكان البشر من حيث التصحيح وتزويد التغذية الراجعة للنصوص. وبالتالي أبرزت

الباحثة أهمية التغذية الراجعة لتطوير مهارة الكتابة وأوصت باستخدام محركات التغذية الراجعة وتصحيح

المقالات الآلية فقط كوسائل تعليمية للمساعدة في تعزيز الكفاءات الكتابية لدى الطلبة.

TALE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

I. Introduction

Writing is one of the four main language learning skills which students are obligated to develop during the process of acquiring a second or foreign language. When students experience writing in formal classroom settings, they learn to practice their knowledge, ideas, and beliefs on paper in response to an assigned writing task. As students progress, they are required to build new sets of skills in relation to spelling, vocabulary, grammar, coherence, and cohesion; in hopes that their simple written products will evolve into more complex and elaborate essays. Nevertheless, improvement in writing is not achieved automatically; it is rather an effortful and tedious process for both students and teachers.

There are two approaches to writing—writing as a product and writing as a process. According to Thulasi, Bin Salam, and Ismail (2014), "The product approach is one of the most practiced approaches in schools around the world" (p. 790). This approach urges students to construct a final product similar to an exemplary essay supplied by their teachers. A typical product approach consists of the following four stages: (1) familiarization, (2) controlled writing, (3) guided writing, and (4) free writing. Students need to experience each stage before submitting their final work for evaluation. When following the aforenamed approach, students showcase their linguistic abilities, while imitating a model text. Teachers are usually concerned with the linguistic features within the text and acknowledge the organization of ideas as more important than the ideas themselves. In other words, teachers place their emphasis on the completion of a written product as a whole and in most cases; students only submit one draft (Thulasi, Bin Salam, & Ismail, 2014, p. 791).

On the contrary, writing as a process is best described as a cyclical approach, where students undergo eight essential stages prior to submitting their final work. The stages include the following: (1) brainstorming, (2) planning, (3) mind mapping, (4) first draft, (5) peer feedback, (6) editing, (7) final draft, and finally, (8) evaluation. Thulasi, Bin Salem, and Ismail

(2014) stated that "students are needed to move back and forth while going from one stage to another stage and taking part in the writing activities" (p. 790). Additionally, teachers adopt the role of a facilitator who monitors the written texts during the different stages. The process approach is concerned with the purpose of the text, student creativity and collaboration; and most importantly, it places a great deal of emphasis on drafting. That said, students need to frequently practice writing and submit multiple drafts throughout the process. Considering the aforementioned characteristics of both approaches, it can be argued that the main difference between the two is manifested in the final evaluation that each text type will receive. "The product approach looks at 'What is written in the text and what score can be given?' and the process approach looks at 'How the text is written and how to improve the development of the content and ideas?'" (Thulasi, Bin Salem, & Ismail, 2014, p. 791).

Burstein, Chodorow, and Leacock (2003) asserted that "the best way to improve one's writing skills is to write, receive feedback from an instructor, revise based on the feedback, and then repeat the whole process as often as possible" (p. 1). Strictly speaking, when the process approach to writing is employed, there is more room for practice which will lead to certain improvement as students go through the drafting, editing, and rewriting stages, until they obtain polished, final written products. During the editing phase, students submit their work to their teachers for evaluation and in turn, receive either written or verbal feedback. According to Askew et al. (as cited in Thorsteinsen, 2010), "feedback is a judgment about the performance of another with the intentions to close a gap in knowledge and skills" (p. 3). Evaluation, in any of its various forms, is crucial in terms of shifting the learner's focus to the areas in the text that need improvement and or adjustment. As a result, students are heavily reliant on the written criticisms supplied by their teachers as they revise their written products and develop their writing competencies (Purnawarman, 2011).

Not to mention, Zahida, Farrah, and Zaru (2014) highlighted the importance of providing appropriate feedback on students' writings given that some instructors give comments that are rather general, ambiguous, and unbeneficial. When teacher written feedback is unclear, students become frustrated; and in turn, lose their motivation to write and desire to progress. According to the researchers, "English writing teachers should carefully select the most helpful feedback, the one which motivates their students and helps them improve their writing skill" (p. 1277). That stated, feedback in any of its various forms—form-focused, meaning-focused, or positive—is pivotal in terms of motivating students to reach higher levels of English language proficiency.

Furthermore, Amrhein and Nassaji (2010) argued that "students believe that seeing their errors marked will help them learn and remember them better than if their errors are not marked" (p. 114). Consequently, teachers are faced with a significant responsibility on their part since they are required to spend endless hours reading, correcting, and providing comments on how students can better their writings. The feedback writing process is time-consuming and demands great amounts of energy and high proficiency in language and writing mechanics from the teacher. Thereupon, many teachers in the L2 classroom stand in favor of the product approach to writing and or choose to limit the number of written assignments to avoid the burden of error correction and giving feedback (Burstein, Chodorow, & Leacock, 2003). Consequently, when writing assignments are reduced, there are fewer opportunities for students to exercise their writing skills and improve their performance.

1.1 Statement of the Problem

Given that the feedback-writing process is very demanding with respect to effort and time, some writing teachers at the university level in Palestine grade their students' written assignments without giving any feedback on how their writings can be improved. Many teachers simply give a letter grade and/or underline some of the errors without further explanation. Their actions can be attributed to the number of students in the classroom. Public universities in

Palestine, namely Hebron University, do not limit the number of students enrolled per course. Thus, it is not surprising for writing classes can hold anywhere from 20 to 60 students each.

English major students at Hebron University are required to enroll in several writing courses in order to fulfill the requirements of their undergraduate study. Writing courses are offered during the second year of the English program and such courses are designed to equip students with proper writing strategies and mechanics and assist them in developing well-written and organized essays; thus, improving their writing skills. Throughout the semester, students are exposed to different forms of paragraph or essay writing which will help prepare them for advanced writing courses such as "Methods in Research Writing". In such courses, students are mainly exposed to traditional feedback that be either written or verbal; and in some cases, students do not receive any feedback at all. Adding to that, the time allocated for each academic semester is roughly 16 weeks, which is relatively short and leaves little to no room for writing practice. There is not enough time for teachers to follow the process approach to writing and have students complete several drafts for each writing assignment, while constantly supplying corrective feedback after each and every draft.

As mentioned earlier, the increase in student number brings about a dilemma for course instructors who teach more than one course. Teachers are placed in a situation which requires them to cover all the assigned topics for the semester; in addition to, grading countless student writings and debating whether or not they should provide written feedback on student errors. Under these circumstances, some teachers simply skim through student essays and assign scores without highlighting the areas that need revision. Writing students receive their work and are left uncertain with regard to what aspects of their writings need improvement. In their explanation of how teachers mark students' writings, Salteh and Sadeghi (2012) stated the following:

Many teachers find it necessary to assign a letter grade to those papers, a grade untidily and carelessly scribbled in foreboding red ink. The grades, indeed, impart nothing of

teachers' evaluation of the content, the mechanics of style, or even the organization of the paper. The student is left to figure out the reason behind the grade on his/her paper (p. 375).

1.2 Purpose of the Study

The present study is an attempt at investigating three varying types of feedback—(1) oral, (2) written, and (3) automated plus manual feedback—provided for three Advanced Writing sections at Hebron University and their effectiveness in developing the writing skill of Palestinian EFL learners. In addition, the present study focuses on comparing the efficiency of using automated feedback supported by manual feedback versus traditional written feedback on developing students' writing skills and the ongoing debate relevant to whether manually-generated scores and feedback can be replaced by artificially intelligent machine learning technologies, namely Criterion®, an essay evaluation software provided by the Educational Testing Service (ETS) based in Princeton, New Jersey.

1.3 Significance of the Study

Sermsook, Liamnimitr, and Pochakorn (2017) confirmed that a number of studies have been conducted to investigate the effectiveness of teacher corrective feedback on student writing with the majority of the studies yielding results that reflect the usefulness of such feedback. Having acknowledged that feedback is crucial for the development of writing skills and that providing effective evaluations on student writings is hindered by the overpopulated classrooms, restricted class time, and the lack of practice opportunities, software developers aimed at designing automated essay scoring programs, hoping to address the aforementioned complexities. Furthermore, upon operating the aforementioned software, students will be exposed to a new type of feedback (automated feedback) which is quite different from the traditional feedback (verbal or written feedback) that they receive from their writing instructors. In addition, they will have endless attempts for practicing writing and responding to essay

prompts in the comfort of their own homes. The primary aim of automated scoring software is to evaluate students' written productions by assigning grades as well as offering diagnostic feedback relevant to grammar, usage, style, and mechanics that are nearly-equivalent to those supplied by human raters. Automated feedback is generated from artificially intelligent programs which function on the basis of machine learning algorithms in order to replicate human performance when needed. In other words, students are free to rehearse what they learn in their writing classes and will be able to put their passive knowledge into active use.

That stated, the present study will shed light on the impact of utilizing Criterion® in an EFL writing context at Hebron University and will explore whether the software can bring about an added value in terms of developing Palestinian students' writing competencies. The findings of the present study will be of interest to the Ministry of Higher Education, universities in the Palestinian context, as well as EFL/ESL instructors seeking technological alternatives to ease the rigorous process of essay scoring and feedback writing for teachers and provide unlimited opportunities of essay-writing practice for students to help them develop their skills; and ultimately, achieve higher test scores.

1.4 Research Questions

The main research questions for the present study are as follows:

(1) Are there any statistical differences in writing performance between and within groups of participants due to the type of feedback they received?

(2) Is there a relationship between participant level and performance in the post-test?

(3) What is the effect of utilizing Criterion® on developing English major students' writing competencies at Hebron University?

(4) Are there any differences in student attitudes before and after being exposed to automated scoring and feedback?

(5) Do the results of the study suggest that manual feedback can be replaced with automated feedback generated by artificially intelligent machine learning technologies?

1.5 Research Hypotheses:

The following hypotheses will be addressed in the present study:

H1: The statistical difference in the writing performance of students who received automated feedback supported by manual feedback is more significant in comparison to those who obtained written feedback and oral feedback.

H2: There is a positive correlation between participant level and their performance in the post-test; in other words, as the level of participants increases, their performance increases accordingly.

H3: The utilization of Criterion® assists students in developing their writing competencies through repeated practice.

H4: Students reflect positive attitudes towards using Criterion® and being exposed to a new form of feedback.

H5: Manually-generated scores and feedback cannot be replaced with automated feedback supplied by Criterion® since the software was designed to provide supplemental feedback to guide students as they practice writing.

1.6 Limitations of the Study

It is worth noting that the present study was limited to a total of 66 participants taking the Advanced Writing course at Hebron University in the Spring semester of the academic year 2018-2019. Thus, the generalizations of the results will be bound to the aforestated population. In addition, the study was limited to 4.5 months in coordination with the available trial period granted by the Educational Testing Service to utilize the Criterion® software from 17 December 2018 until 30 April 2019.

II. Literature Review

This chapter covers the background theories pertinent to feedback and its importance in writing. Furthermore, it sheds light on the concepts of artificial intelligence and machine learning and their functions in automated essay scoring and feedback software. Finally, the chapter presents recent studies that investigated the impact of the automated essay scoring software, Criterion®, on students' writing skills.

2.1 Defining Feedback

According to Hattie and Timperley (as cited in Harks, Rakoczy, Hattie, Besser, and Klieme, 2014), feedback can be defined as "information provided by an agent […] regarding aspects of one's performance or understanding" (p. 269). Mory (2004) stated that feedback can be understood in the light of three main definitions which combine to create what is referred to as the "feedback triad". Mory explained the roles of the feedback triad stating the following:

> First, feedback served as a motivator or incentive for increasing response rate and/or accuracy. Second, feedback acted to provide a reinforcing message that would automatically connect responses to prior stimuli—the focus being on correct responses. Finally, feedback provided information that learners could use to validate or change a previous response—the focus falling on error responses (p. 746).

Alkhatib (2015) explained that the notion of feedback is troubling for many teachers due to their indecisiveness on which form of feedback, formative or summative, to employ. Formative feedback is defined as ongoing feedback that offers students advice on how to better their writing; on the contrary, summative feedback is more of a general evaluation of students' writings rather than proposed suggestions for improvement. In defining both forms of feedback, Wiggins (as cited in Alkhatib, 2015), argued that "the purpose of evaluative feedback is to make sure the student clearly understands what the mark is for a task or assignment" (p. 37). In turn, the primary aim of advisory feedback includes the following: (1) equipping learners with

information highlighting their task performance, (2) shed light on aspects which need adjustment or support, and (3) facilitate the process of improvement by offering steps to be taken so as to develop writing mechanics.

Since summative feedback is not as demanding on the part of the teacher in contrast to formative feedback, it is favored by many. Formative feedback, on the other hand, requires a great deal of effort and in almost all cases; it is time-consuming. The reason behind this was explained by Mason and Bruning (as cited in Harks et al., 2014) who asserted that feedback should be worded in a way that assists the receiver in correcting errors, task strategies, as well as inappropriate misconceptions, and thus, improve achievement (p. 270). Feedback should be clear, precise, and phrased in a way that helps the learner adjust weaknesses in his/her writings. Given that feedback needs to be constructed in such manner, it becomes a burden for teachers to supply detailed comments for a large number of students with limited time.

2.2 Importance of Feedback in Writing

As mentioned earlier, feedback is considered a building block in the context of assisting students in polishing their written texts and most importantly, developing their writing skills. Providing feedback is a form of assessment that teachers resort to when monitoring students' written progress. Budimlic (2012) asserted that teachers are often satisfied with their teaching methodology; therefore, they assume that their students are making satisfactory progress when it comes to writing. In turn, they do not pay careful attention when it comes to formally assessing students' written productions. With that said, teachers can "wrongfully assume that pupils are progressing when in fact there is no actual progress" (p. 1). Neglecting corrective feedback is disadvantageous since students will not be made aware of their errors. In addition, if there is no room left for validation and or correction, chances of student-error fossilization will increase significantly.

Scholars and educators were in unison regarding the belief that corrective feedback plays a vital role in assisting learners with the improvement of their writing skills (Hammad, 2015). Nonetheless, in 1996, Truscott brought forth an opposing argument stating that students undergo a stressful phase when their errors are revealed by their teachers. Consecutively, corrective feedback does not enhance their writing abilities and can be considered detrimental to their language development (Zahida, Farrah, & Zaru, 2014). In rebuttal to Truscott's views, Ferris (2006), stated that corrective feedback is of paramount importance to learners as they have managed to make effective revisions with the help of their teachers' comments and markings.

Seiffedin and El-Sakka (2017) investigated the effect of direct-indirect corrective e-feedback in relation to the writing accuracy of EFL students. Direct-indirect e-feedback is a strategy of presenting corrective feedback via email in the following stages—encoded indirect feedback, coded indirect feedback, and direct feedback. During the first stage, the teacher would simply underline or circle the students' errors without any written note so as to give the students a chance to spot the errors and attempt to correct them. In the second stage, the teacher would indicate the type of error with a symbol or code as a hint for the students. In the final stage, the teacher would correct the remaining errors which the students were not able to do themselves. The researchers found that the combination of electronic direct and indirect feedback in three stages have helped students in terms of recognizing their errors and correcting them. Giving feedback shifted the learners' attention to the different areas of language structure which needed modification; and as a result, the students made use of the opportunities to diagnose their mistakes, make necessary changes, and re-send their final drafts.

Sermsook, Liamnimitr, and Pochakorn (2017) stated that corrective feedback is beneficial when it comes to developing students' writing skills since grammatical errors, which may obstruct the quality of their written work, are decreased. The researchers mentioned that written feedback is the most common type of corrections presented by teachers. Teachers provide

written feedback by writing their comments, adjustments, and advice on students' written tasks and assignments. In addition, Sermsook, Liamnimitr, and Pochakorn (2017) confirmed that written and oral criticism go side by side where the former is supported by the latter and learners have the chance to discuss the written comments supplied by their instructors for the purpose of gaining a better understanding of their errors and how they can be modified.

Tee and Cheah (2016) considered written feedback the most influential tool relevant to the learning of writing since it has assisted learners in monitoring their progress and exposed them to different techniques to further develop their skills. In turn, the researchers reported that in order for feedback to reach its optimum effectiveness, it needs to be intelligible, straightforward, supportive, and applicable so that learning can come to pass. Consequently, students will be equipped with the ability to engage in self-controlled learning and think critically which will promote an advancement in writing. Tee and Cheah (2016) asserted that written feedback informs learners of writing expectations and enables them to revise and amend their drafts based on the highlighted strengths and weaknesses to achieve their writing objectives.

Purnawarman (2011) carried out a study which aimed at exploring the impact of teacher feedback on ESL/EFL students' writing. The results of the study suggested that teacher written corrective feedback was more productive than its absence considering that students' grammatical accuracy and writing quality were improved. The researcher declared that these findings counter Truscott's main assertion concerning the ineffectiveness of teachers' feedback in reducing students' errors. Purnawarman (2011) acknowledged the benefits of explicit corrective comments and recommended that such feedback should not be disregarded by teachers as it is a fundamental step in students' learning.

Binglan and Jia (2010) investigated the impact of teacher feedback on the long-term development of EFL students' writing accuracy. The results of the study show that students

who received written feedback which was specific and sustained by marginal explanations improved significantly in terms of accuracy in written tasks. In addition, students favored feedback with corresponding clarifications as opposed to general feedback since it can establish student-teacher rapport. In other words, students would like teachers to reflect their attitudes and opinions regarding student writings as students express their own in their tasks.

Despite the findings of the previous research which mark the importance of feedback in achieving written proficiency, Abu Zir (2016) stated that many researchers feel that feedback should not be regarded as a necessity. Abu Zir added that Suzan (2008) argued that teachers, in favor of such claim, believe that providing students with corrections frequently, might yield a "reversed result and even limit the students' improvement, claiming that it is 'better to allow the students to develop their own content' and yet 'to step in later with feedback to reorient the text'" (p. 18).

2.3 Artificial Intelligence and Machine Learning

Artificial Intelligence (AI) is best known as a sub-field of computer science where computers are programmed to accomplish tasks that are usually performed by humans in situations where they are required to act based on their intelligence. Das, Dey, Pal, and Roy (2015) stated that "the ultimate goal of AI is to develop human-like intelligence in machines" (p. 31). AI-based computer systems can perform tasks which require human intelligence, such as "visual perception, speech recognition, decision-making, and translation between languages" (Sanlam Global Investment Solutions, 2017, p. 1). This can be accomplished through algorithms, a set of formulated rules employed by computers for problem-solving operations, which aim to mimic the natural process in which a human brain acquires knowledge.

The underlying framework behind AI is Machine Learning (ML). "Machine learning, which is a field that had grown out of the field of artificial intelligence, is of utmost importance as it enables the machines to gain human like intelligence without explicit programming" (Das et

al., 2015, p. 31). In other words, ML is what allows machines to learn on their own and develop their performances, showcasing their intelligence. According to the researchers, Tom Mitchell gave a more formal definition for ML stating that "a computer program is said to learn from experience (E) with respect to some task (T) and some performance measure (P)" (Das et al., p. 31). If the program's task (T), measured by its performance (P) improved with experience (E), then the program can officially be classified as a machine learning program.

ML is sectioned into four main types including the following: (1) supervised learning, (2) unsupervised learning, (3) reinforcement learning, and (4) recommender systems. Supervised learning is a process which can be performed through the comparison between computed output and expected output. Simply, the programs learn by calculating the error and adjusting it to reach the predicted output. Unsupervised learning programs learn on their own by means of discovering and adopting a set of built-in patterns. The form of learning that takes place can also be referred to as clustering algorithm since the program divides the data or input patterns into clusters. The third type, reinforcement learning, is concerned with how the artificially intelligent program operates towards correct and incorrect output. Rewards are given for correct output and errors in output receive penalties. Recommender systems, contrast with the aforenamed types, in the sense that they learn by virtue. Such learning is achieved when an online user adjusts the site to satisfy the needs of customers (Das et al., 2015, p. 31-32). A prominent example of the role that machine learning algorithms play is evident in the design of automated essay scoring engines.

2.4 Automated Essay Scoring

Given that the feedback writing process is tedious and time-consuming, researchers and computer programmers have worked together to develop automated essay scoring software which use machine learning to assign grades and give feedback on students' writings. Ramalingam, Pandian, Chetry, and Nigam (2018) stated that automated essay assessment

systems employ machine learning techniques to classify a corpus of textual entities into small numbers of discrete categories which correspond to grades given by humans (p. 1). Wang and Brown (2007) reported that Automated Essay Scoring (AES) is a "relatively young field" which was introduced by Page in 1966. Page pioneered in designing a computer program with a grading capacity, giving it the title Project Essay Grader (PEG). Being a former English high school teacher, Page believed that students can improve their writings if they were given access to technology that provides feedback. According to Shermis, Burstein, Higgins, and Zecher (2010), Page was convinced that one of the reasons explaining why students are not given writing assignments very often was that teachers were required to review their texts and supply corrective feedback.

As a result, Page and his colleagues at the University of Connecticut were determined to utilize the statistical capabilities of computers. Consequently, they searched for textual features that could be drawn by computers from a series of texts and applied multiple linear regression to determine "an optimal combination of weighted features" that predicted the scores given by human raters (Wang & Brown, p. 6). According to Kukich (as cited in Wang & Brown), some of the predictive features, identified by Page, included "word length, essay length in words, number of commas, number of prepositions, and number of uncommon words– the latter being negatively correlated with essay scores" (p. 6). The findings of Page's project were quite promising since 7 out of the 30 predictive features utilized significantly correlated to human scores. Shermis, Burstein, Higgins and Zecher (2010) reported that "While PEG [Project Essay Grader] produced impressive results; the technology of the time was too primitive to make it a practical application" (p. 2). Thus, the concept of Automated Essay Scoring was too risky and did not receive popularity among researchers at that time.

2.5 Manual vs. Automated Scoring

The efficiency of automated essay scoring and feedback versus traditional manual scoring remains a debatable topic despite the positive findings of research conducted to test significant differences between AES and human scoring. Researchers are concerned with the validity of AES software in generating results through algorithms which seek to reflect human intelligence. Yang, Buckendahl, and Juszkiewicz (as cited in Wang & Brown, 2007) stated that "some researchers criticized AES tools for their "over-reliance on surface features of responses, the insensitivity to the content of responses and to creativity, and the vulnerability to new types of cheating and test-taking strategies" (p. 4). Additionally, Calfe (2000) reported that the agreement between human scores and AES can be attributed to the "interrelatedness of different elements in naturally occurring compositions" (Wang & Brown, p. 4). In other words, some writers produce well-written and organized pieces of writings, displaying accurate usage of writing mechanics and rich vocabulary; therefore, the scores that they received from the automated software were similar to the ones offered by human raters.

In spite of the correspondence in scores on well-formed essays, researchers still continue to question the positive impact of automated scoring on written texts with poor mechanics and grammatical or spelling errors. Not to mention, Wang and Brown (2007) argued that critics of automated scoring and feedback are concerned with the aftermath of machine grading which will lead student writers to believe that writing is insignificant since the targeted audience is simply a machine as opposed to a human being (p. 5). Another drawback of AES, besides diminishing student motivation, which lead researchers to speculate its inefficiency was the misinterpretation of student writing. In his study on utilizing "Grammarly", an automated grammar checker, Nova (2018) declared that one of the main weaknesses associated with automated scoring engines happens to be misleading feedback. The subjects of his study reported instances where Grammarly gave ambiguous feedback which altered the students' intentional meanings (Nova, p.

87). Considering the aforestated weaknesses of AES, it is without doubt that critics hold legitimate concerns with respect to whether traditional manual scoring can be replaced by automated scoring software (Wang & Brown, 2007).

2.6 The Criterion® Software

Criterion® is one of the leading software that puts artificial intelligence and machine learning into use. Criterion® Online Writing Evaluation service is a web-based instructor-led writing tool, provided by the Educational Testing Service (ETS) organization in Princeton, New Jersey. Developers of this automated engine claim that it is designed to assist learners in planning, writing, and revising their written essays. Criterion® offers students immediate diagnostic feedback which helps them improve their writing skills. The feedback highlights grammar, spelling, mechanics, usage, as well as organization and development. In addition, it gives students the opportunity to practice writing independently with instantaneous detailed feedback at their disposal. Not to mention, its utilization frees up instructors' grading time, allowing them to shift their focus to content, style, and higher level writing skills[1].

Shermis, Burstein, Higgins, and Zecher (2010), experts in the field of AES, claimed that Criterion® was "designed to help teachers in K-12 classrooms, and in community college, and university classrooms who typically have a large number of writing assignments to grade" (p. 10). Considering that the feedback writing process is strenuous and the number of written assignment assigned to students is limited, researchers sought ways to offer students additional writing practice and ease the burden that teachers have to carry while grading. In turn, Criterion® was developed to provide learners with more descriptive essay feedback similar to the one given by human raters. The application targets grammar errors, incorrect word usage, and other issues that affect the quality of student-written essays (Burstein, Chodorow, &

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[1] https://www.etsglobal.org/Tests-Preparation/English-Skill-Building-Tools/Criterion-Online-Writing-Evaluation-Service

Leacock, 2003). Shermis, Burstein, Higgins, and Zecher (2010) explained the descriptive feedback of Criterion® stating the following:

> The descriptive feedback is comprised of a suite of programs that evaluate and, subsequently, flag essays for errors in grammar, usage, and mechanics; identify an essay's discourse structure; and, recognize undesirable stylistic features. (p. 11)

Aluthman (2016) conducted a study testing Criterion's impact on Saudi undergraduate students' writing skills and claimed that formative feedback and automated holistic score offered by Criterion® had positive effects on the overall writing proficiency of the subjects involved. Furthermore, she reported a significant improvement in their writing mechanics and moderate improvement in grammar, usage, and style. Additionally, after implementing Criterion® in a Japanese college, Tsuda (2014) confirmed that the automated engine plays a vital role in enhancing students' written performance. Furthermore, students exposed to Criterion® had positive attitudes towards using it and claimed that they were given more opportunities to practice their writing.

While reviewing the pertinent literature, the researcher noticed a gap relevant to the implementation of AES software in the Palestinian context. Although Criterion® is being adopted in various countries, to the best of the researcher's knowledge, it has not been used in Palestine. Therefore, by conducting the present study, the researcher aims at addressing the gap in literature in the Palestinian context and hopefully, the results of the study will contribute to the general understanding of automated essay evaluation, its effectiveness, limitations, and the implications of its usage in Palestinian university settings.

III. Methodology

This chapter addresses the methodological design of the present study. Details relevant to the research participants and selection criteria; data collection instruments and validity and reliability testing; and the research procedure are discussed in the sections below.

3.1 Participants

A total of 66 English major students, ages (16-22), served as the participants of the present study. The participants were selected by means of quota sampling from three sections of "Advanced Writing Course" at Hebron University in the Spring Semester of the academic year 2018-2019. The reason behind adopting this type of non-probabilistic version of stratified sampling was due to the following limited time frames: (1) the 4.5-month-subscription period granted by the Educational Testing Services (ETS) to use Criterion® and (2) the availability of three writing sections at Hebron University during the Spring semester 2018-2019. In addition, the participants were identified on the basis of a shared characteristic, in this case, English major students taking a writing course. The subjects of the study were namely 2nd, 3rd, and 4th year-level learners. The participants were selected from the aforementioned academic levels since English writing courses are offered to students during their second and third academic years according to the English Program paradigm at Hebron University. Despite the distribution of courses within the syllabus, some students fall behind schedule or decide to drop certain courses and retake them during their senior year. It is worth noting that student level was treated as a variable to check whether it affected students' performance in the post-test or not.

The participants were grouped based on the section of Advanced Writing to which they belonged as follows: (1) Group 1, (2) Group 2, and (3) Group 3. That stated, the researcher adopted a quasi-experimental research design since each of the 3 groups of participants involved were manipulated with a different form of feedback. Group 1 consisted of 22 students (all females) and received oral feedback on their written work throughout the semester. Fifteen of the

total number of participants were 2nd year students, six participants were 3rd year students, and one participant was a 4th year student. Group 2 included 22 students, two males and 20 females, and received traditional written feedback from their course instructor on their writings. Eighteen participants were 2nd year students and the remaining four were 3rd year students. On the other hand, Group 3 had 22 participants (19 females and 3 males) who were introduced to automated feedback which was generated by Criterion®, the essay writing software tested in the present study. In addition, the participants received supportive manual feedback from their course instructor alongside the automated feedback from the software. Fifteen participants were 2nd year students and the remaining seven participants were 3rd year students.

3.2 Instrumentation

Prior to conducting this study, an ethical approval for conducting research was obtained from the Educational Testing Service (ETS). A cover sheet (See Appendix A) explaining the aim of the study, highlighting voluntary participation, and assuring the confidentiality of students' work and results was attached to both the pre-test and post-test that were administered during the study. Two tests (See Appendix B & C) were developed and employed by the researcher. The participants were required to provide their student numbers so that the researcher can keep track of their work. In both tests, the participants were given 40 minutes to indicate their academic year and write a well-developed expository essay consisting of five paragraphs on one of the given topics. Each test presented two topics which aimed at eliciting opinions and experiences from the participants in relation to their status as English major students at Hebron University. Adding to that, the participants were given the liberty of choosing either topic. The pre-test explored if there were any significant differences in the participants' writing skill prior to receiving any form of feedback on their writings. On the other hand, the post-test checked for statistical differences in writing performance between and within groups of participants due to the type of feedback they received (oral, written, or automated plus manual).

Moreover, the tests were reviewed by two experts from Hebron University and one expert from Bethlehem University for validity and the contents were modified based on their comments and recommendations. Once both tests were administered and sent to three raters for evaluation, the scores given by each rater was recorded for analysis. To ensure inter-rater reliability, the Intraclass Correlation Coefficient (ICC), a measure of the reliability of measurements or ratings, was calculated for both tests. The results are shown in Tables 1 and 2 below.

Table 1

Intraclass Correlation Coefficient of Raters' Scores on Pre-Test

	Intraclass Correlation[b]	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.633[a]	.490	.749	7.01	65	130	.000
Average Measures	.838[c]	.743	.899	7.01	65	130	.000

Table 1 above shows the Intraclass Correlation Coefficient of the scores provided by the three raters on the pre-test. It can be noticed that the average measures, an index for the reliability of different raters averaged together, has a value of .838. This indicates that there was a high similarity between the values (scores) given by the three raters in the pre-test. Table 2 below shows the Intraclass Correlation Coefficient of the scores provided by the three raters on the post-test.

Table 2

Intraclass Correlation Coefficient of Raters' Scores on Post-Test

	Intraclass Correlation[b]	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.761[a]	.665	.837	10.977	65	130	.000
Average Measures	.905[c]	.856	.939	10.977	65	130	.000

It is evident from Table 2 above that the average measures at a value of .905 indicate that the scores, as provided by the raters, strongly resemble each other. Therefore, it is safe to say that both scores of the pre and post-tests are reliable.

Two questionnaires (See Appendix D & E) were designed and distributed to the participants of Group 3 who received automated essay scores and feedback as well as supportive manual feedback for the purpose of eliciting their attitudes towards the effect of Criterion® in developing their writing skills. Both questionnaires consisted of the following three sections: (1) Demographic Profile, (2) Domains and Items of the Questionnaire, and (3) Open-Ended Questions. The pre-questionnaire was distributed to the participants at the beginning of the Spring semester to elicit their attitudes towards the writing skill before being exposed to automated essay scoring and feedback generated by ETS Criterion®. Whereas, the post-questionnaire was distributed at the end of the Spring semester to check for any differences in student attitudes after being exposed to automated scoring and feedback in addition to supportive manual feedback on their written productions. Prior to providing their responses, the participants

were assured by the researcher that their responses will remain strictly confidential and anonymous and will only be used for research purposes.

The participants were asked to provide their student numbers so that the researcher can keep track of their responses. In the first section of both questionnaires, the participants were required to tick the appropriate box which corresponded to their demographic profile as follows: gender, age, and academic year/level. In the second section, the participants were required to indicate the extent to which they agreed or disagreed with the statements of the questionnaire which were divided into the three sub-sections as follows: (a) The Writing Skill in Advanced Writing Course, (b) The Automated Essay Scoring and Feedback Software, Criterion®, and (c) Development in Writing Skills via the given 5-point Likert scale of (1) Strongly Disagree, (2) Disagree), (3) Neutral, (4) Agree, and (5) Strongly Agree. In the third section, the participants had to answer the open-ended questions in a few words highlighting their anticipated experiences prior to using Criterion® in the pre-questionnaire and their experiences after using the aforenamed software as well as any improvements regarding the writing skill.

In order to test the validity of both pre and post-questionnaires, the researcher sent both questionnaires to two experts from Hebron University and one expert from Bethlehem University and the final draft was prepared in light of their comments and suggestions. For reliability of both questionnaires, the Cronbach's Coefficient Alpha formula was used; the results are shown in Table 3.

Table 3

Cronbach's Coefficient Alpha for Pre and Post-Questionnaire

Questionnaire	Number of Items	Total Alpha Value
Pre-Questionnaire	15	.937
Post-Questionnaire	15	.934

The data in Table 3 above shows that the total Alpha values for both questionnaires were .937 and .934. In order for a Cronbach's Alpha value to be accepted, it needs to be at least 0.6 and the ideal value for acceptance is 0.7 and above. Since the values of .937 and .934 were greater than 0.7; this indicated that both questionnaires were reliable and could be applied in the present study.

Finally, a semi-structured interview (See Appendix F) consisting of seven questions which were in unison with the statements that received either a 'disagree' or 'strongly disagree' response regarding the automated essay scoring and feedback software, Criterion®, in the post-questionnaire was conducted with the participants of Group 3 as a follow-up procedure to expand on their responses. The researcher asked follow-up questions accordingly.

Procedure

First, the researcher consulted the research supervisor and the Head of the English Department at Hebron University prior to contacting the Educational Testing Service (ETS) organization based in Princeton, New Jersey. Once permission was granted, the researcher contacted the ETS support group via the listed email on their official website, criterionsupport@ets.org, inquiring about the fees of subscription pertaining to the automated software Criterion®, the possibility of receiving a free trial, and the duration of such trial if the product was to be tested for research purposes in the Middle East, specifically, the Occupied Palestinian Territories. The researcher received an email from the Business Development (BD) Manager of ETS Global Middle East, Mrs. Rasha Al-Azzeh, stationed in Amman, Jordan. The BD manager highlighted some important information about the company and the variety of services offered and declared the company's willingness to work with the researcher.

Upon receiving the email, the researcher contacted the BD manager via phone, explaining the research topic and objectives, and in turn, was sent a research-only purposes questionnaire (See Appendix G) and a non-commercial research software license agreement (See Appendix H)

to be filled out and signed. The researcher filled both forms and attached a supporting document (See Appendix I) justifying the aim behind conducting such research in the Palestinian context, listing the research questions and hypotheses, and explaining the research methodology. All the forms were sent to the BD manager in Amman and were forwarded to the ETS headquarters in Princeton to be reviewed by the research area. The product request forms and research objectives were approved by the ETS client manager, Ms. DeAndrea Hall, and the researcher was granted an acceptance form with a username and password for software access (See Appendix J) alongside a total of 30 student subscriptions. The trial class was listed as "Hebron University—Zeiadee Khalil" and was valid from 17 December 2018 until 30 April 2019.

In addition, two access guide forms—Instructor Quick Access Guide (See Appendix K) and Student Quick Access Guide (See Appendix L) were sent to the researcher for assistance with software registration and account setup. The former gave the instructor a detailed step-by-step procedure to follow while (1) registering as a new user, (2) adding a class, (3) creating assignments, (4) adding students to a class, (5) working with student portfolios, and (6) viewing reports. Whereas, the latter was designed to guide students with (1) registering as a student, (2) logging in as a student, (3) adding an additional class, (4) beginning a response, (5) viewing criterion feedback, (6) revising a response, (7) viewing teacher and peer feedback, (8) utilizing help and resources, and finally, (9) archiving portfolios.

To conduct the present study, the researcher selected 66 undergraduate students by quota sampling from three different "Advanced Writing Course" sections at Hebron University to participate in the study. The students and their instructors were informed of the research and its purpose. After they granted their consent for participation, the participants were divided equally into three groups, Group 1, Group 2, and Group 3. Each group consisted of 22 students from three different academic years (2nd, 3rd, and 4th). Once they had been sectioned into the three groups, the researcher administered the pre-test (See Appendix B). Each participant was asked to

provide their student number and their academic year for the researcher to keep track of their status.

Once the participants in all three groups completed the pre-test, the tests were sent to three experienced raters in the field of writing for evaluation. The researcher provided the raters with a rating rubric (See Appendix M) that is adopted by the automated software, Criterion®, in scoring student essays. The rubric offered a total of six scores; the highest is a score of 6 and lowest is a score of 1. In addition, detailed descriptions of each score from 1 to 6 were listed in the rubric to assist the raters during evaluation. Once the researcher received the scored pre-tests from the raters, the average of all three 3 scores for each test was calculated and recorded for analysis throughout the study. Furthermore, the pre-questionnaire (See Appendix D) was distributed to the participants of Group 3 only prior to being introduced to Criterion® and its online services for the purpose of eliciting their expectations regarding the software and the feedback it offers.

Following the completion of the pre-questionnaire, the researcher obtained permission from the course instructor of the students in Group 3 in order to give a detailed orientation on how to access and utilize Criterion®. Prior to giving the orientation, the researcher created a username and password for each participant to use when logging into the software. On the day of the orientation, the researcher introduced Group 3 to Criterion® and demonstrated how to gain access to the software following the "Student Quick Access Guide" (See Appendix L). The researcher provided each participant with a slip of paper containing the new username and password for access. The participants followed the sign-in procedure (See Appendix N) via their mobile devices to make sure that they have entered the correct data and were able to log into their accounts. With the permission of one of the participants, the researcher signed into a student account and showed the remaining participants where to look for upcoming assignments, how to browse for well-written essay samples, how to plan essay outlines, how to respond to the

assigned tasks, how to submit their essays for scoring, how to understand their errors, and how to find the number of attempts they had available for each task.

Furthermore, the researcher explained to the subjects how the essays will be scored by reviewing the rating rubric provided by the software and showed how the score reports can be accessed and the different categories (organization and development, grammar, usage, mechanics, and style) which the software will provide feedback on. Not to mention, the researcher highlighted that the course instructor can add supportive manual feedback in the Comments Section (See Appendix O) alongside the automated feedback of the software. At the end of the orientation, the researcher answered the questions which the participants posed relevant to the software and clarified any misunderstandings.

Throughout the semester, the course instructor of Advanced Writing Group 3 created five writing assignments on Criterion® (See Appendix P) for the participants to complete and receive automated scores and feedback and provided supportive manual feedback where necessary. At the end of the Spring semester and after the participants of Group 3 completed all five written assignments on Criterion®, received automated scores as well as automated plus manual feedback, and completed the requirements of their Advanced Writing course, the researcher administered the post-test (See Appendix C) for all three groups of the present study (Group 1, Group 2, and Group 3). The post-test was administered to check for differences in their writing performances after receiving three different types of feedback—oral feedback, written feedback, and manually-supported automated feedback—respectively. Once the participants completed the post-test, the tests were sent to the same three raters who rated the pre-tests at the beginning of the semester for evaluation using the same rating rubric (See Appendix M). The average scores were calculated and recorded for analysis. Moreover, the researcher distributed the post-questionnaire (See Appendix E) to participants of Group 3 to elicit their attitudes towards the writing skill after using the automated software. After reviewing the responses on the post-

questionnaire, the researcher conducted the semi-structured interview (See Appendix F) with the

participants who responded with either "disagree" or "strongly disagree" on the post-

questionnaire statements pertinent to the automated essay scoring and feedback software,

Criterion®.

IV. Results

This chapter presents the findings of the study. The results are divided into five sections, since five data collection tools were employed—a pre-test (See Appendix B), a post-test (See Appendix C), a pre-questionnaire (See Appendix D), a post-questionnaire (See Appendix E), and a semi-structured interview (See Appendix F). The five sections of the present chapter are concerned with the results of the pre-test, post-test, pre-questionnaire, post-questionnaire, and semi-structured interview respectively. Quantitative data obtained from the two tests and two questionnaires were analyzed using the Analysis ToolPak in Microsoft Excel version 2016 and IBM SPSS Statistics version 22. Qualitative data retrieved from the open-ended questions in both questionnaires and the semi-structured interview were analyzed based on the Grounded Theory Coding Procedures as proposed by Glaser and Strauss (2009). According to the researchers, the Grounded Theory Coding Procedures are used specifically during the analysis of qualitative data to verify and saturate incidents that yield codes; in other words, categories.

4.1 Results of the Pre-Test

As mentioned earlier in the present study, the aim of the pre-test was to explore if there were any significant differences in the participants' writing performance prior to receiving any form of feedback on their writings. The pre-test was scored out of six based on the Criterion® Rating Rubric (See Appendix M). Table 4 below provides a correction key with the intervals which correspond to the 6 scores of the Criterion Rating Rubric alongside each score description. The total number of intervals (5) was divided by the number of scores (6) which resulted in a distance of 0.83. The distance of 0.83 was added to each point and one percent was subtracted to avoid repetition.

Table 4

Correction Key for Pre and Post-Test Means

Mean Intervals	Score Description
1— 1.82	A typical essay at this level: • may be incoherent • may be underdeveloped • may contain severe or persistent writing errors
1.83 — 2.65	A typical essay at this level is flawed by one or more of the following weaknesses: • serious disorganization or underdevelopment • little or no detail, or irrelevant specifics • serious and frequent errors in sentence structure and usage • serious problems with focus
2.66 — 3.48	A typical essay at this level may reveal one or more or the following weaknesses: • inadequate organization or development • inappropriate or insufficient details to support or illustrate generalizations • a noticeably inappropriate choice of words or word forms • an accumulation of errors in sentence and/or usage
3.49 — 4.31	A typical essay at this level: • addresses the writing topic adequately but may slight parts of the task • is adequately organized and developed • uses some details to support a thesis or illustrate an idea • demonstrates adequate but possibly inconsistent facility with syntax and usage • may contain some errors that occasionally obscure meaning
4.32 — 5.14	A typical essay at this level: • may address some parts of the task more effectively than others • is generally well-organized and well-developed uses details to support a thesis or illustrate ideas • displays facility in the use of language • demonstrates some syntactic variety and range of vocabulary, though it will probably have occasional errors

Table 4 (continued).

5.15 — 6	A typical essay at this level:
	• effectively address the writing task • is well-organized and well-developed • uses clearly appropriate details to support a thesis or illustrate ideas • displays consistent facility in the use of language • demonstrates syntactic variety and appropriate word choice, though it may have occasional errors

Table 4 shows the following six mean intervals: (1 - 1.82), (1.83 - 2.65), (2.66 - 3.48), (3.49 - 4.31), (4.32 - 5.14), and (5.15 - 6) alongside the score description for each. Table 5 below presents the frequencies and percentages of the pre-test scores for the three groups.

Table 5

Frequencies and Percentages of Pre-Test Scores for All Groups

Score	Frequency	Percent	Valid Percent	Cumulative Percent
1.67	1	1.5	1.5	1.5
2.00	4	6.1	6.1	7.6
2.33	8	12.1	12.1	19.7
2.67	12	18.2	18.2	37.9
3.00	18	27.3	27.3	65.2
3.33	13	19.7	19.7	84.8
3.67	6	9.1	9.1	93.9
4.33	2	3.0	3.0	97.0
4.67	2	3.0	3.0	100.00
Total	**66**	**100.0**	**100.0**	

It is evident from Table 5 that the majority of the participants (18.2%, 27.3%, and 19.7%) received scores of 2.67, 3.0, and 3.33 on the pre-test respectively. Such scores reflect that the students' essays revealed one or more of the following weaknesses: (1) inadequate organization or development, (2) inappropriate or insufficient details to support or illustrate generalizations, (3) a noticeably inappropriate choice of words or word forms, and (4) an accumulation of errors in sentence structure and/or usage. Figure 1 below presents the results of the pre-test for Group 1 that received oral feedback from the course instructor.

Figure 1

Pre-Test Results for Group 1
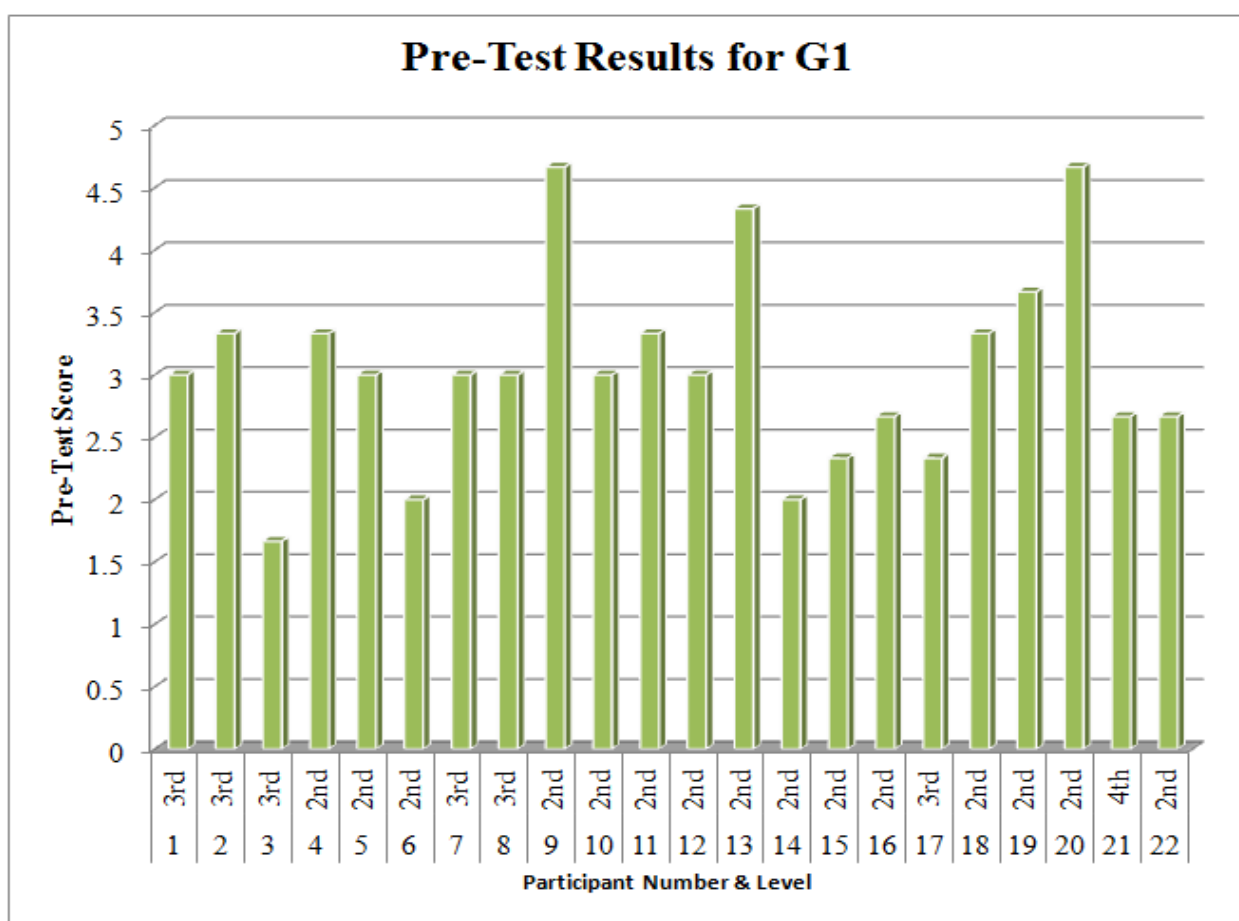
It can be seen from Figure 1 above that the highest score of 4.67 was achieved by participants 9 and 20 who are both 2nd year students. The second highest score of 4.33 was achieved by participant 13, a 2nd year student as well. Whereas, the majority of the participants

(10 out of 22) received scores of 3 or 3.33 on the test. The lowest score on the pre-test was a

score of 1.67 as achieved by participant 3, a 3rd year student. Figure 2 below shows the results of

the pre-test for Group 2 whose participants obtained written feedback from the course instructor.

Figure 2

Pre-Test Results for Group 2
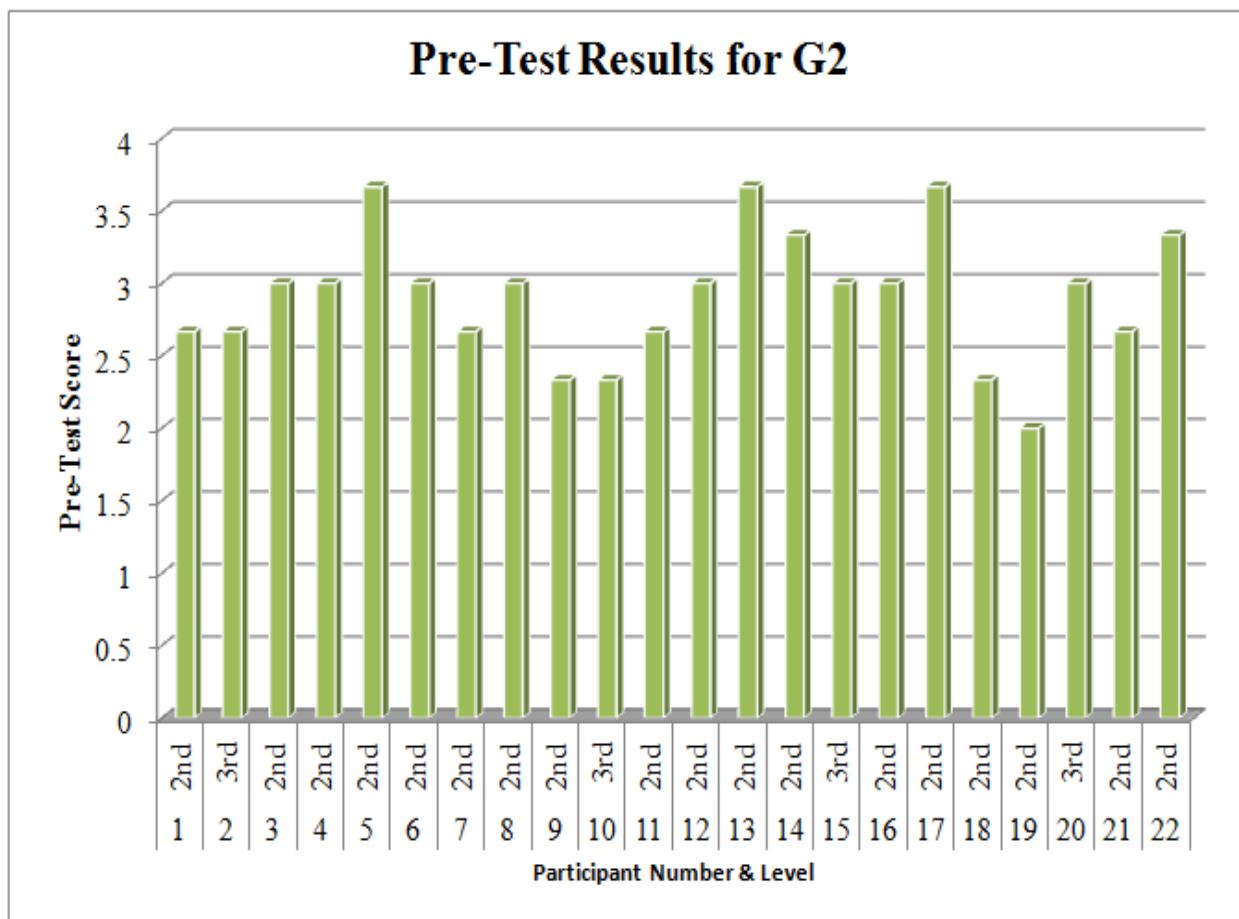
It can be noticed from the figure above that the highest score achieved was 3.67 by

participants 5, 13, and 17. They are all 2nd year students. On the other hand, the majority of the

participants (10 out of 22) scored either 3 or 3.33 on the aforementioned test. Furthermore, the

lowest score of 2 was achieved by participant 19, a 2nd year student. Results of the pre-test for

Group 3, whose participants received automated feedback from Criterion® and manual feedback

from the course instructor, are shown in Figure 3 as follows.

Figure 3

Pre-Test Results for Group 3
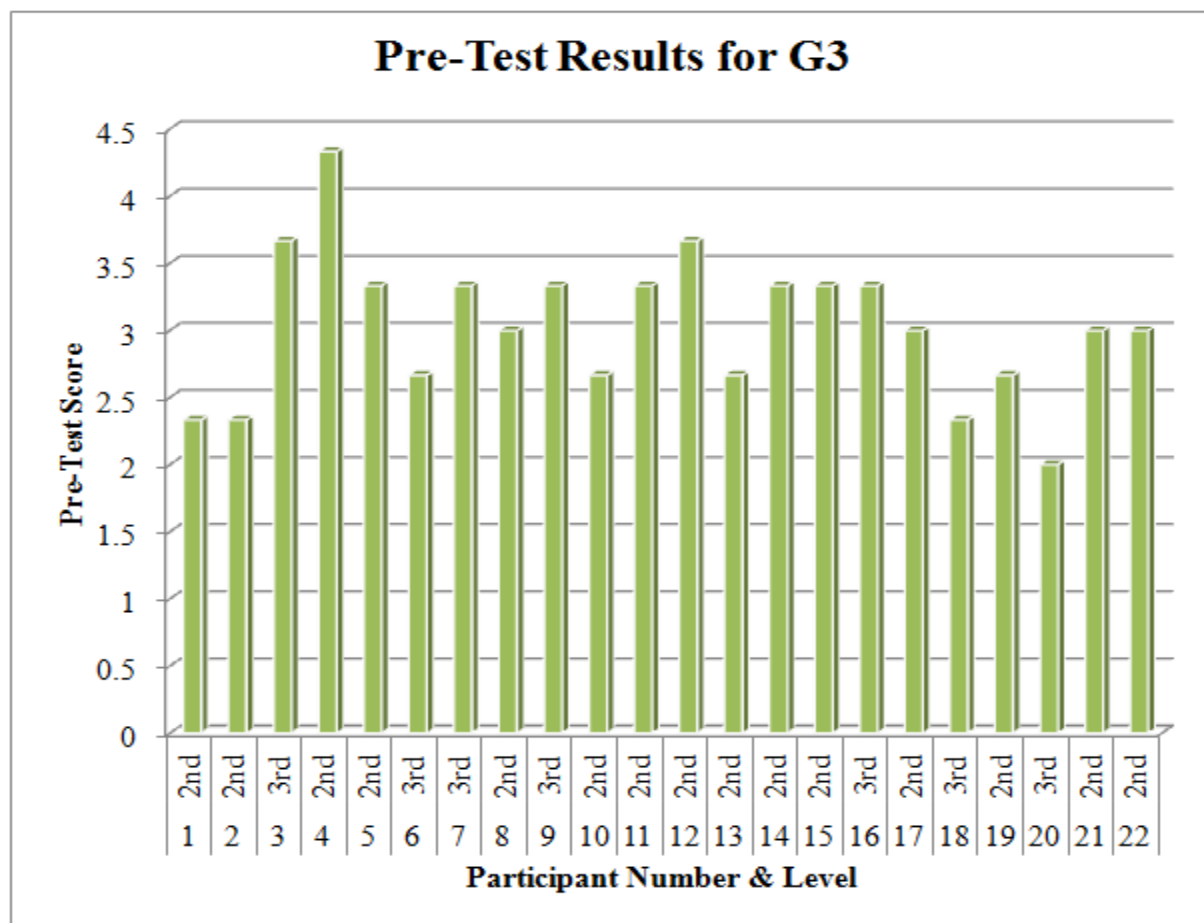
According to the given data in Figure 3, only participant 4, a 2nd year student, scored 4.33 on the pre-test. Meanwhile the majority of the participants (9 out of 22) received a score of 3.33 or 3.67. Moreover, participant 20, a 3rd year student, scored the lowest score (2) in this section. Table 6 reflects the means and standard deviations for students' writing performance before receiving any form of feedback.

Table 6

Means and Standard Deviations for Students' Writing Performance in the Pre-Test

G	N	M (out of 6)	SD
G1	22	3.05	0.79
G2	22	2.91	0.45
G3	22	3.03	0.54
Total	**66**	**3.00**	**0.60**

Note. G = Group; N = Number; M = Mean; SD = Standard Deviation

Based on the given data in Table 6, the total mean for the three groups was 3.00 and the total standard deviation was 0.60. The means and standard deviations confirm that the participants had nearly similar performance levels at the beginning of the semester. In order to find out whether the results of Table 6 above were significant or not, a One-Way ANOVA was conducted to check for differences in writing performance between and within the three groups. There were no significant differences at .05 between or within these groups as can be seen in Table 7 below.

Table 7

One-Way ANOVA for Differences in Writing Performance Between and Within Groups of Participants in the Pre-Test

Source of Variance	SS	d.f.	MS	F	Sig.
Between Groups	0.25	2	0.12	0.33	0.722
Within Groups	23.64	63	0.38		
Total	**23.89**	**65**			

Note. SS = Sum of Squares; d.f. = degrees of freedom; MS = Mean Squares; F = F-Ratio; Sig. = Significance

It is evident from the data in Table 7 that there were no significant differences at .05 between or within the groups which means that all three groups (G1, G2, and G3) had similar

writing performance before receiving any type of feedback. It is safe to say that all groups were

nearly homogenous with regard to their writing performance since their scores fall under the

same criterion and the difference is not significant considering that the p-value is 0.722 which is

greater than .05.

4.2 Results of the Post-Test

The aim of the post-test was to check for any statistical differences in writing

performance between and within groups of participants (G1, G2, and G3) due to the three types

of feedback they received —oral, written, or automated plus manual. The post-test was scored

out of six based on the same rating rubric that was used to score the pre-test (See Appendix M).

The correction key (See Table 4) with the six intervals corresponding to the scores of the

Criterion Rating Rubric and score descriptions is applicable in interpreting the means of the post-

test in the following section. Table 8 below presents the frequencies and percentages of the post-

test scores for the three groups.

Table 8

Frequencies and Percentages of Post-Test Scores for All Groups

Score	Frequency	Percent	Valid Percent	Cumulative Percent
1.00	2	3.0	3.0	3.0
1.33	3	4.5	4.5	7.6
1.67	1	1.5	1.5	9.1
2.00	1	1.5	1.5	10.6
2.33	2	3.0	3.0	13.6

Table 8 (continued).

2.67	9	13.6	13.6	27.3
3.00	6	9.1	9.1	36.4
3.33	5	7.6	7.6	43.9
3.67	15	22.7	22.7	66.7
4.00	5	7.6	7.6	74.2
4.33	7	10.6	10.6	84.8
4.67	8	12.1	12.1	97.0
5.00	2	3.0	3.0	100.0
Total	**66**	**100.0**	**100.0**	

It is evident from Table 8 that the majority of the participants (13.6%, 22.7%, and 12.1%) received scores of 2.67, 3.67, and 4.67 on the post-test respectively. Student essays that received a score of 2.67 reflect that the students' essays revealed one or more of the following weaknesses: (1) inadequate organization or development, (2) inappropriate or insufficient details to support or illustrate generalizations, (3) a noticeably inappropriate choice of words or word forms, and (4) an accumulation of errors in sentence structure and/or usage. Essays that received a score of 3.67 fall under the criterion which states that a typical essay at this level: (1) addresses the writing topic adequately but may slight parts of the task, (2) is adequately organized and developed, (3) uses some details to support a thesis or illustrate an idea, (4) demonstrates adequate but possibly inconsistent facility with syntax and usage, and (5) may contain some

errors that occasionally obscure meaning. Additionally, essays that received a score of 4.67 can

be described based on the following points: (1) may address some parts of the task more

effectively than others, (2) is generally well-organized and well-developed, (3) uses details to

support a thesis or illustrate ideas, (4) displays facility in the use of language, (5) demonstrates

some syntactic variety and range of vocabulary, though it will probably have occasional errors.

Figure 4 below presents the results of the post-test for Group 1 that received oral feedback.

Figure 4

Post-Test Results for Group 1
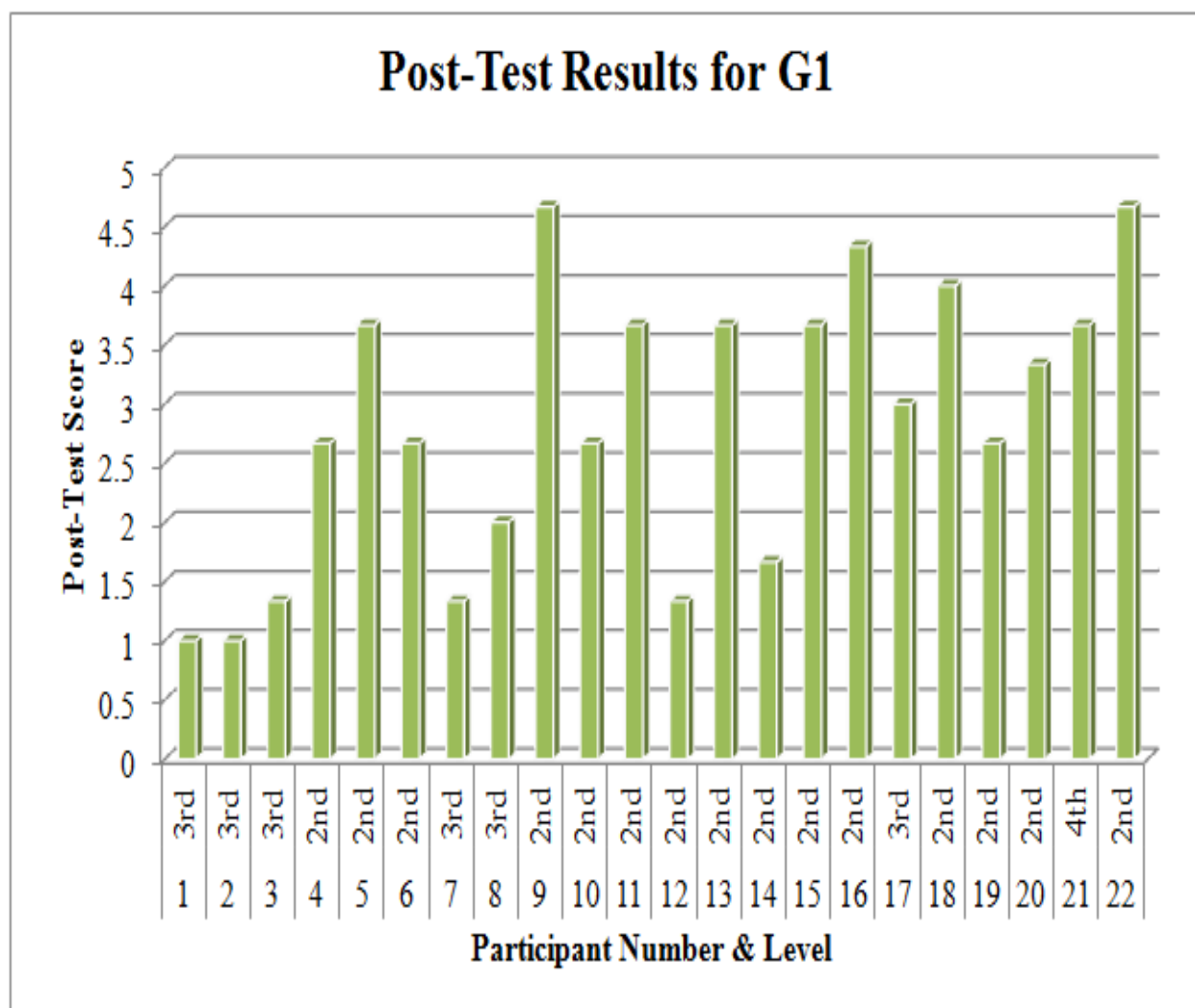
It can be seen from Figure 4 above that the highest score of 4.67 was achieved by

participants 9 and 22 who are both 2nd year-students. The second highest score of 4.33 was

achieved by participant 16, a 2nd year-student as well. Whereas, the majority of the participants

(5 out of 22) received a score of 3.67 and (4 out of 22) received a score of 2.67 on the test. The

lowest score on the post-test was a score of 1 as achieved by participants 1 and 2 who are both

3rd year students. Figure 5 below shows the results of the post-test for Group 2 that received

written feedback.

Figure 5

Post-Test Results for Group 2
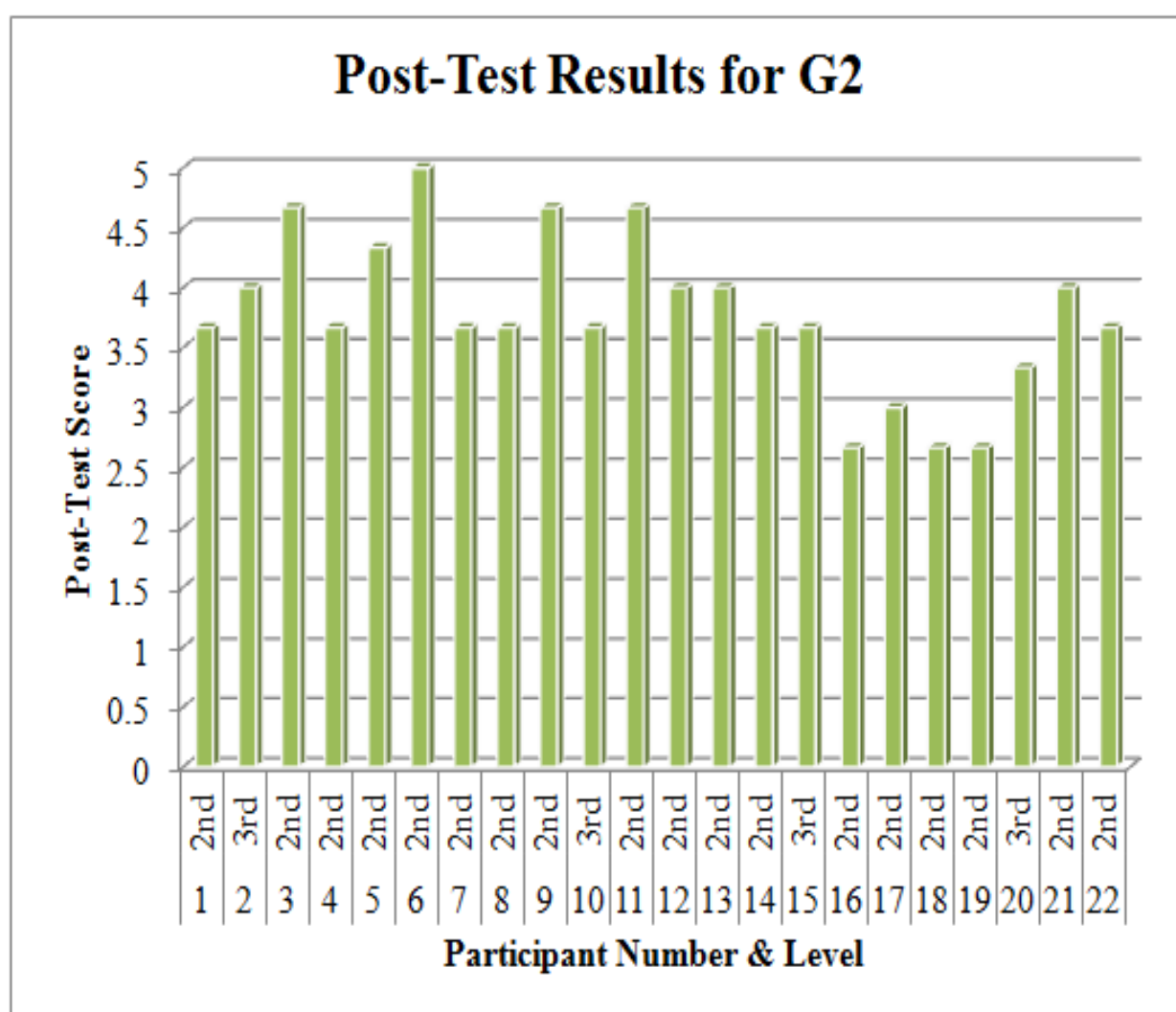
As shown in Figure 5 above, the highest score achieved was a score of 5 by participant 6,

a 2nd year student. On the other hand, three 2nd year students (participants 3, 9, and 11) scored the

second highest score of 4.67. Moreover, the majority of the participants (8 out of 22) scored 3.67

on the aforenamed test. Meanwhile, the lowest score in this group was 2.67 and it was achieved

by participants 16, 18, and 19; all of them are 2nd year students. It is worth noting that the

majority of the participants in Group 3 showed progress in terms of their writing performance in

the post-test compared to the pre-test. Results of the post-test for participants in Group 3, who

received automated and manual feedback, are shown in Figure 6.

Figure 6

Post-Test Results for Group 3
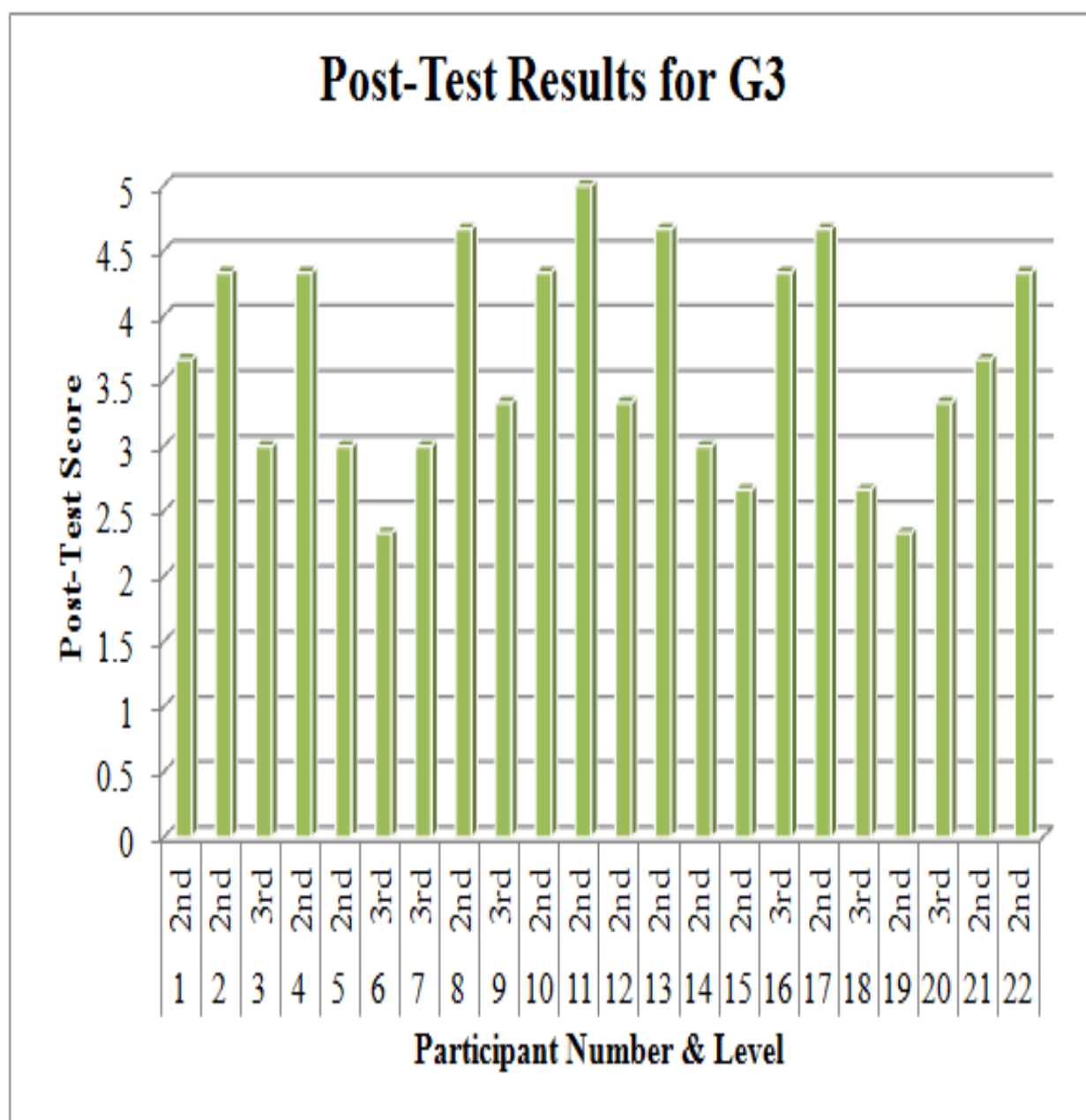
According to the given data in Figure 6, only participant 11, a 2nd year student, scored 5 on the post-test; this was the highest score. The second highest score was 4.67 which was achieved by participants 8, 13, and 17; all were 2nd year students. Meanwhile, five out of 22 participants received a score of 4.33. Participants 6 and 19 scored the lowest score of 2.67 on the test. Table 9 reflects the means and standard deviations for students' writing performance after receiving three forms of feedback—oral, written, and automated plus manual.

Table 9

Means and Standard Deviations for Students' Writing Performance in the Post-Test

G	N	M (out of 6)	SD
G1	22	2.85	1.19
G2	22	3.77	0.65
G3	22	3.64	0.84
Total	**66**	**3.42**	**0.89**

Note. **G = Group; N = Number; M = Mean; SD = Standard Deviation**

Based on the given data in Table 9, the total mean for the three groups was 3.42 and the total standard deviation was 0.89. The mean of the results of the pre-test for Group 2 was 2.91 at the beginning of the semester; however, after receiving written feedback, the mean of the post-test results increased to 3.77. This means that the participants of Group 2, who received written feedback from their instructor, progressed more than those of Groups 1 and 3, who were given oral feedback and automated plus manual feedback respectively. Despite that, it is evident from the table above that participants in Group 3, who received automated feedback from Criterion®

and manual feedback improved as well from a pre-test score mean of 3.03 to a post-test score

mean of 3.64. On the contrary, participants of Group 1 did not show any signs of progress in

relation to their writing performance after receiving oral feedback from their course instructor

since the pre-test score mean was 3.05 at the start of the semester and then decreased to 2.85 at

the end of the semester as seen in Table 9 above. Generally speaking, the total mean and

standard deviation of the post-test confirm that the participants' performance levels at the end of

the semester have improved in contrast with those of the pre-test. In order to find out whether the

results of Table 9 above were significant or not, a One-Way ANOVA was conducted to check

for differences in writing performance between and within the three groups. The results are

shown in Table 10 below.

Table 10

One-Way ANOVA for Differences in Writing Performance Between and Within Groups of

Participants in the Post-Test

Source of Variance	SS	d.f.	MS	F	Sig.
Between Groups	10.95	2	5.48	6.47	.003
Within Groups	53.34	63	0.85		
Total	**64.29**	**65**			

Note. **SS = Sum of Squares; d.f. = degrees of freedom; MS = Mean Squares;**

F = F-Ratio; Sig. = Significance

Table 10 above reveals that the difference in students' writing progress was very

significant. That is true since the p-value was .003 which is less than .05. In addition, the results

of the One-Way ANOVA test showcased exactly where that difference occurred. Since student

level was treated as a variable, a Pearson Correlation test was conducted to check whether it affected students' performance in post-test or not as shown in Table 11.

Table 11

Pearson Correlation of Student Levels and Post-Test Scores

		Level	Post Test Score
Level	Pearson Correlation	1	-.358**
	Sig. (2-tailed)		.003
	N	66	66
Post Test Score	Pearson Correlation	-.358**	1
	Sig. (2-tailed)	.003	
	N	66	66

Note. ****Correlation is significant at the 0.01 level (2-tailed).**

It can be seen from Table 11 which showcases the results of the Pearson Correlation test between the variables—student level and post-test scores—that the value of the correlation coefficient, r, is -.358 with a (2-tailed) significance of .003. In order to show the relationship between the aforementioned variables, the data from Table 11 was transferred to a scatter plot graph. The relationship between the variables on a scatter plot is shown in Figure 7 below.

Figure 7

Scatter Plot for Pearson Correlation of Student Levels and Post-Test Scores
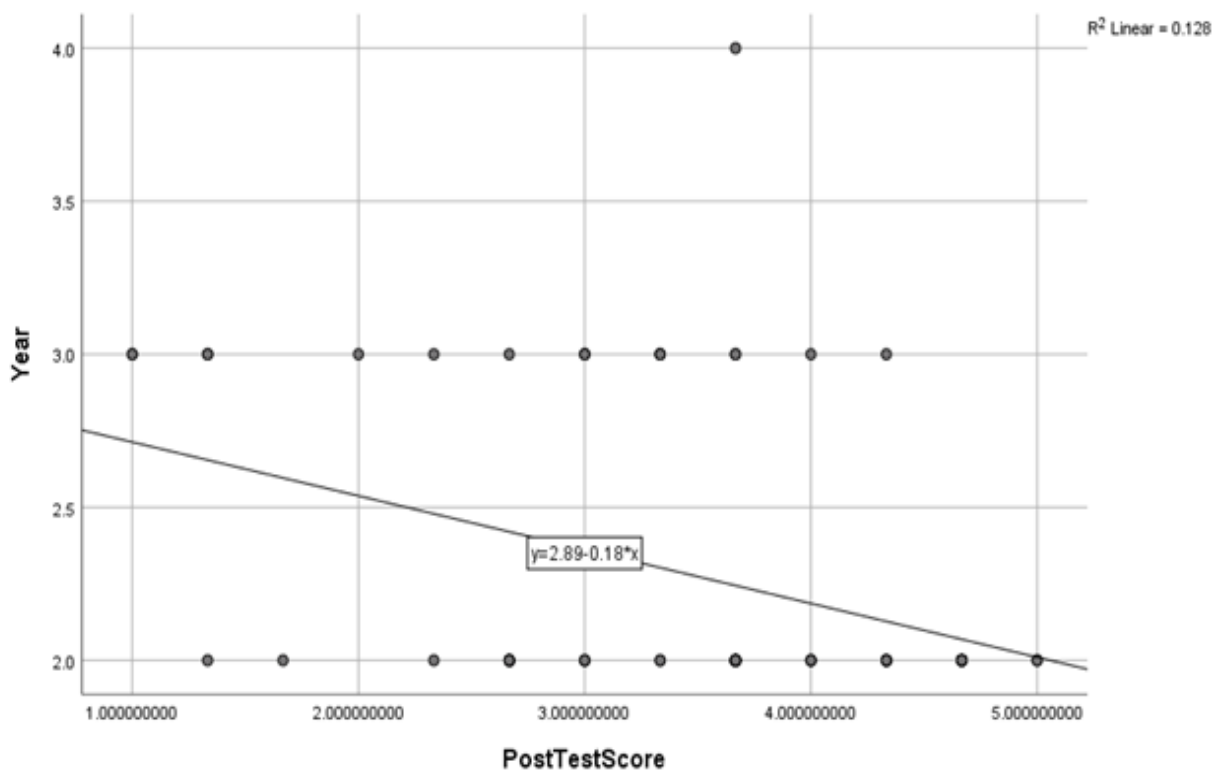
The scatter plot shows a medium downhill (negative) linear relationship between the levels of the participants and their post-test scores. In other words, as the level of participants decreases, the scores increase. That is true since most of the students who achieved scores of 4 and above were namely 2nd year students.

4.3 Results of the Pre-Questionnaire

The primary goal of the pre-questionnaire was to elicit the attitudes of the participants in Group 3 towards the writing skill before being exposed to automated essay scoring and feedback generated by ETS Criterion®. The pre-questionnaire consisting of the following three sections: Section A (Demographic Profile), Section B (Domains and Items of the Questionnaire), and Section C (Open-Ended Questions), was distributed to the participants in the beginning of the

Spring semester 2018-2019 as they started the "Advanced Writing" course at Hebron University.

The demographic characteristics of Group 3 based on gender are shown in Table 12 below.

Table 12

Demographic Characteristics of Group 3 Based on Gender Variable

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Male	3	13.6	13.6	13.6
Female	19	86.4	86.4	100.0
Total	**22**	**100.0**	**100.0**	

It is evident from Table 12 that the total number of participants in Group 3 was 22

students. Three participants are males and make up 13.6% of the total population. Whereas, the

total number of females in Group 3 was 19 which amounts to 86.4%. Furthermore, the

demographic characteristics based on age are shown in Table 13 as follows.

Table 13

Demographic Characteristics of Group 3 Based on Age Variable

Age	Frequency	Percent	Valid Percent	Cumulative Percent
16-22	22	100.0	100.0	100.0

All the participants in Group 3 fall under the age range of 16 years to 22 years as shown

in Table 13 above. Moreover, the participants' levels (academic years) are listed in Table 14

below.

Table 14

Demographic Characteristics of Group 3 Based on Level Variable

Level	Frequency	Percent	Valid Percent	Cumulative Percent
2nd	15	68.2	68.2	68.2
3rd	7	31.8	31.8	100.0
Total	**22**	**100.0**	**100.0**	

As shown in the table above, the majority of the participants in Group 3 (68.2%) were 2nd year students. In addition, the remaining 31.8% are 3rd year learners. To facilitate the interpretation of the means for the pre and post-questionnaires, Table 15 below provides a correction key with the intervals which correspond to the 5-point Likert scale reflecting the following opinions: (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, and (5) strongly agree. The total number of intervals (4) was divided by the number of opinions (5) which resulted in a distance of 0.8 between each point. The distance of 0.8 was then added to each point and one percent was subtracted to avoid repetition.

Table 15

Correction Key for Pre and Post Questionnaire Means

Mean Intervals	Opinion Scale
1— 1.79	Strongly Disagree
1.8 — 2.59	Disagree
2.6 — 3.39	Neutral
3.4 — 4.19	Agree
4.2 — 5	Strongly Agree

Table 15 shows the following five mean intervals: (1 - 1.79), (1.8 - 2.59), (2.6 - 3.39), (3.4 - 4.19), and (4.2 - 5). The mean squares between the first interval (1 - 1.79) mirror that the students strongly disagree on the given statements; whereas, mean squares within the second interval (1.8 - 2.59) reflect the opinion "disagree". The third (2.6 - 3.39), fourth (3.4 - 4.19), and fifth (4.2 - 5) intervals represent the following opinions: "neutral", "agree", and "strongly agree" respectively. The means and standard deviations of the pre-questionnaire items were calculated and listed in Table 16 below. They were divided into three main sections since the pre-questionnaire items were designed to address 3 domains/sub-sections as follows: (1) The Writing Skill in Advanced Writing Course, (2) The Automated Essay Scoring and Feedback Software, Criterion®, and (3) Development in Writing Skills.

Table 16

Pre-Questionnaire Means and Standard Deviations

No.	Statements	M	SD
A: The Writing Skill in Advanced Writing Course			
1.	I think that I will enjoy writing essays in this Advanced Writing course.	3.32	1.17
2.	This course will help me prepare for more advanced courses in the English Department.	3.73	1.28
3.	Learning how to write essays will contribute positively to my language proficiency.	4.04	1.13
4.	I think that repeated practice in essay writing will help me develop my writing skill.	4.09	1.38
5.	Feedback, in any of its various forms, plays a significant role in improving my writing skill.	4.14	1.04

Table 16 (continued).

	B: The Automated Essay Scoring and Feedback Software, Criterion®		
6.	I look forward to using the automated essay scoring and feedback software, Criterion®.	3.55	3.55
7.	Criterion's automated services will encourage me to practice essay writing more often.	3.55	1.10
8.	I anticipate receiving automated feedback from Criterion® on my writing.	3.55	0.91
9.	I look forward to getting supportive manual feedback from my course instructor as well.	3.77	1.38
10.	I think that using ETS Criterion services will help me improve my writing performance.	3.86	1.21
11.	Automated feedback from Criterion® will be more helpful than my instructor's feedback.	2.82	0.91
12.	Automated feedback from Criterion® will be meaningless without my instructor's feedback.	3.27	1.52
	C: Development in Writing Skills		
13.	After frequent essay writing practice on Criterion®, I think that I will be able to express my ideas in writing better than I used to.	3.55	1.22
14.	By the end of this course, I think my writing performance will be better than it was at the beginning.	3.82	1.26
15.	By the end of this semester, I will be better equipped for future courses.	3.59	1.14
	Total	**3.64**	**1.35**

As shown in the Table 16, the total mean for all the pre-questionnaire items was 3.64 which means that the majority of the participants reflected an "agree" opinion. The spread of the participants' responses is shown in the standard deviation value of 1.35 which indicates that their responses were between the intervals [2.29, 4.99], corresponding to opinions ranging from "disagree" to "strongly agree". The highest mean calculated was 4.14 for Item 5 which states that feedback, in any of its various forms, plays a significant role in improving the writing skill. This means that the participants acknowledged the pivotal role that feedback plays in helping students

better their writing skill. The lowest mean of 2.82 was for Item 11 which brings forth that automated feedback from Criterion® will be more helpful than the instructor's feedback. The majority of the participants expressed a "neutral" opinion with respect to the effectiveness of automated feedback prior to being exposed to the automated essay evaluation software, Criterion®. Figure 8 below shows detailed responses of the participants in Group 3 to the pre-questionnaire items in sub-section A concerning the writing skill in the Advanced Writing course.

Figure 8

Students' Responses on Pre-Questionnaire Items (Sub-section A)
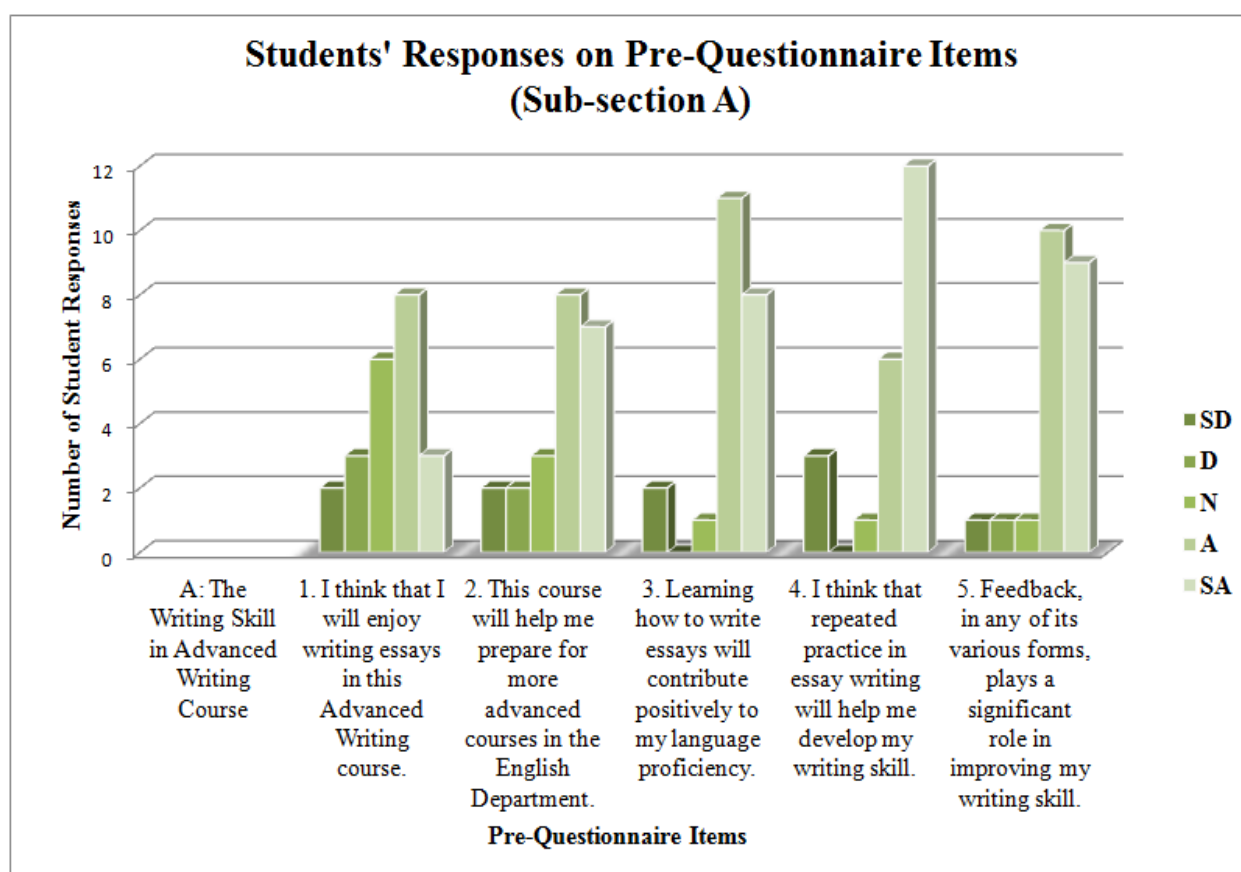
It can be noticed that eight out of 22 participants agreed with Item 1 in the sense that they will enjoy writing essays in the Advanced Writing course. Similarly, the majority of the participants agree with Items 2 and 3 which state that the aforementioned course will help

prepare them for more advanced courses offered by the English Department and that learning how to write essays will have a positive influence on their language proficiency. Not to mention, most of the participants (12 out of 22) strongly agreed with Item 4 since they think that repeated essay writing practice will contribute to the development of their writing skills. As for Item 5, ten participants agreed and nine participants strongly agreed with the fact that feedback, irrespective of its form, plays an important role in improving the writing skill. Figure 9 below showcases the students' responses on the pre-questionnaire items of sub-section B regarding the automated essay scoring and feedback software, Criterion®.

Figure 9

Students' Responses on Pre-Questionnaire Items (Sub-section B)
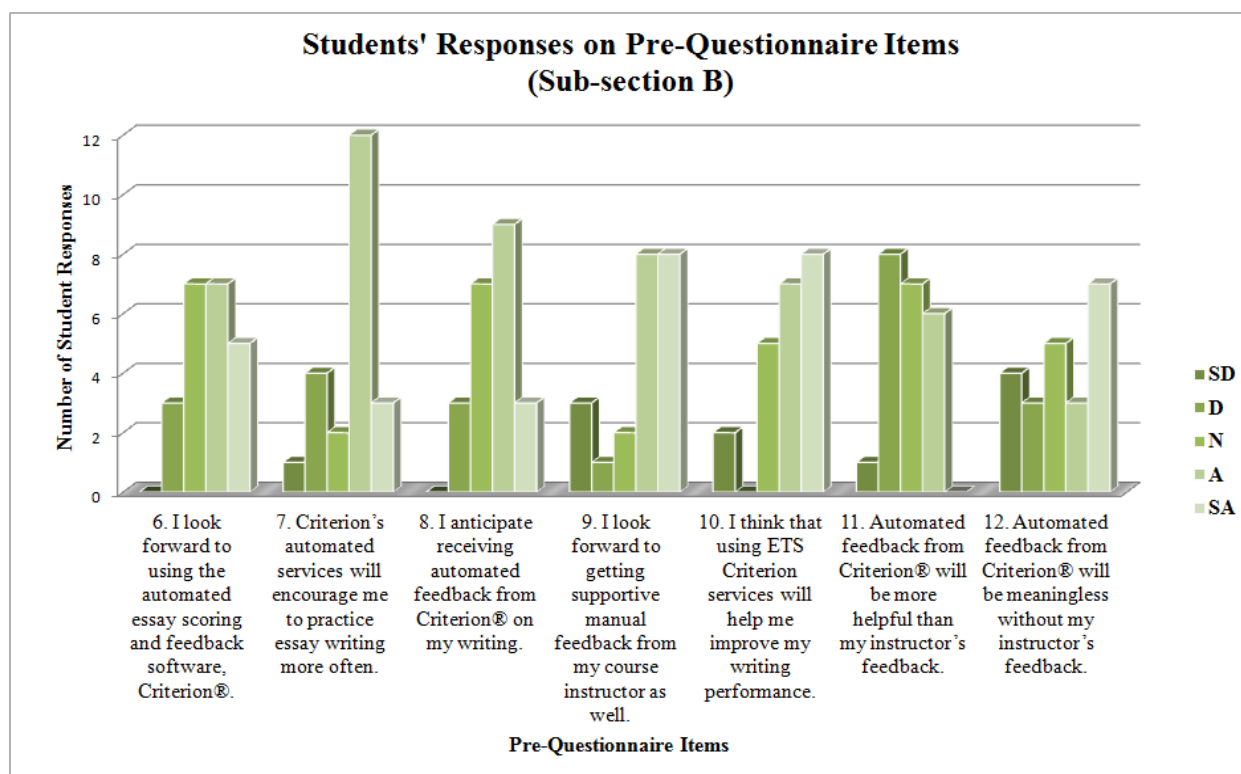
It is evident from Figure 9 above that most of the participants (12 out of 22) either agreed or strongly agreed with Item 6 in terms of looking forward to receiving automated scores and feedback from Criterion®. Likewise, for Item 7, 55% of the subjects agreed that Criterion® will encourage them to practice essay writing more often. Adding to that, nine participants reported

that they anticipated receiving a new type of feedback— automated feedback—while using the software. Concerning manual feedback, 16 participants indicated that they looked forward to getting manual feedback from their course instructor alongside automated feedback in response to Item 9. Similarly, the majority of the participants either agreed or strongly agreed with Item 10 which concerns the notion that using ETS Criterion® services will help improve writing performance. As for Items 11 and 12, the participants' opinions coincided with each other regarding the effectiveness of automated and manual feedback. Eight participants reported that they disagreed with Item 11 which states that automated feedback will be more helpful than manual feedback from the course instructor. Whereas, seven participants believed that feedback from Criterion® will be meaningless without the course instructor's feedback. For the remaining items in sub-section C of the pre-questionnaire, Figure 10 below indicates the opinions of the participants in Group 3 for Items 13, 14, and 15.

Figure 10

Students' Responses on Pre-Questionnaire Items (Sub-section C)
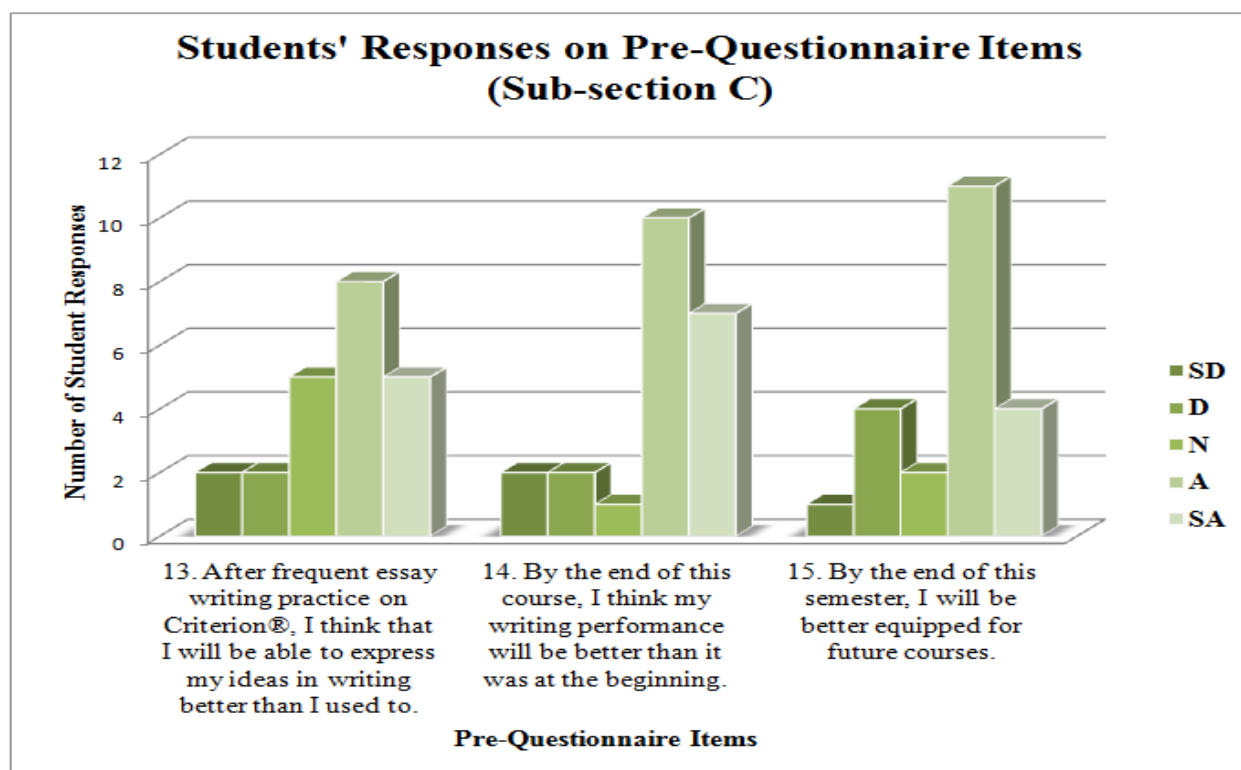
With regard to the 3 items in sub-section C concerning development in writing skills, it is evident from Figure 10 that most of the participants agreed that frequent essay writing practice on Criterion® and completing the Advanced Writing course will have a positive impact on their writing competencies. In addition, by the end of the Spring semester 2018-2019, the participants felt that they will be better equipped for future courses in the English Department paradigm.

4.4 Results of the Open-Ended Questions in the Pre-Questionnaire

As mentioned earlier, the third section of the pre-questionnaire (Section C: Open-Ended Questions) presented two open-ended questions for the participants of Group 3 to answer. The Grounded Theory Coding Procedures of Glaser and Strauss (2009) were adopted by the researcher to analyze the results of the open-ended questions. The first step followed was open coding. The researcher analyzed the answers of the open-ended questions line by line and key concepts and phrases were arranged into sub-categories and then categories. Next the researcher followed Step 2 which was axial coding. In this step, the relationship between the categories established in Step 1 were identified and connections were made accordingly before moving to Step 3, selective coding. In the final step, the researcher figured out the core categories that include all data. The final codes of students' responses were connected to anticipated writing development and expected software performance. The analysis of data revealed that students' responses towards anticipated areas of writing development include spelling, grammar, vocabulary, error reduction, and essay-writing skill. In addition, the analysis indicated their comments relevant to expected software performance in which they hoped that Criterion® will demonstrate good performance. Table 17 below summarizes the frequencies and percentages of students' responses towards anticipated writing development and expected software performance.

Table 17

Participants' Responses towards Anticipated Writing Development and the Future Use of Criterion®

No.	Response	Frequency	Percentage
A. Anticipated Writing Development			
1.	Essay-Writing Skill	8	26.67%
2.	Error Reduction	6	20%
3.	Grammar	5	16.67%
4.	Spelling	4	13.33%
5.	Vocabulary	4	13.33%
B. Expected Software Performance			
6.	Good Performance	3	10%
Total		**30**	**100%**

Question 1 in the Open-Ended Questions section addressed the area(s) that the participants think they will improve in after being exposed to automated scoring and feedback. As shown in Table 17, the most recurring response relevant to anticipated writing development was *essay-writing skill* with a frequency of 8 (26.67%). That is followed by six cases of improvement by *error reduction* (20%). The response of *grammar* constituted 16.67% of the total number of responses; whereas, *spelling* and *vocabulary* each occurred four times (13.33%). Question 2 allowed the participants to write down their own comments if they had any. Most of the participants (19 out of 22) did not give any comments. Whereas, the remaining three participants commented on the expected performance of Criterion® after its utilization. It is evident from Table 17 that *good performance* had a frequency of 3 (10%).

4.5 Results of the Post-Questionnaire

The aim of the post-questionnaire was to elicit the attitudes of the same participants in Group 3 towards the writing skill after being exposed to automated essay scoring and feedback generated by ETS Criterion®, completing five different writing assignments on the software, and receiving manual feedback from their course instructor. The post-questionnaire was distributed to the participants at the end of the Spring semester 2018-2019 when they completed all the requirements pertaining to the "Advanced Writing" course at Hebron University. Table 18 below shows the means and the standard deviations for the 15 items of the post-questionnaire.

Table 18

Post-Questionnaire Means and Standard Deviations

| No.	Statements	M	SD
A: The Writing Skill in Advanced Writing Course			
1.	I enjoyed writing essays in this Advanced Writing course.	3.09	1.15
2.	This course helped me prepare for more advanced courses in the English Department.	3.411	1.14
3.	Learning how to write essays contributed positively to my language proficiency.	3.73	1.16
4.	Repeated practice in essay writing helped me develop my writing skill.	3.77	1.23
5.	Feedback, in its various forms, played a significant role in improving my writing skill.	3.77	1.23
B: The Automated Essay Scoring and Feedback Software, Criterion®			
6.	The automated essay scoring and feedback software, Criterion® was easy to use.	3.05	1.13
7.	Criterion's automated services encouraged me to practice essay writing more often.	2.82	1.14
8.	Receiving automated feedback from Criterion® on my writing was beneficial.	3.14	1.25

Table 18 (continued).

9.	Supportive feedback from my course instructor complemented the automated feedback.	3.73	1.03
10.	Using ETS Criterion services helped me improve my writing performance.	3.00	1.27
11.	Automated feedback from Criterion® was more helpful than my instructor's feedback.	2.00	1.02
12.	Automated feedback from Criterion® was meaningless without my instructor's feedback.	3.82	1.05
C: Development in Writing Skills			
13.	Having completed several writing tasks on Criterion®, I am able to express my ideas in writing better than I used to.	3.23	1.07
14.	Having completed the Advanced Writing course, my writing performance is better than it was at the beginning.	3.18	1.14
15.	I feel better equipped for future courses after completing this semester.	3.00	1.07
Total		**3.25**	**1.14**

As shown in the Table 18, the total mean for all the post-questionnaire items was 3.25 which means that the majority of the participants reflected a "neutral" opinion. In addition, the spread of the participants' responses is shown in the standard deviation value of 1.14 which means that their responses were between the intervals [2.11, 4.39], corresponding to opinions ranging from "disagree" to "strongly agree". The highest mean calculated was 3.82 for Item 12 which declares that automated feedback from Criterion® was meaningless without the instructor's feedback. This means that after their experience with Criterion®, the participants believed that the automated feedback was not very effective on its own and that it was meaningless without the manual feedback provided by the instructor in the comments section of each writing assignment.

Not to mention, the lowest mean of 2 was calculated for Item 11 which highlights that automated feedback from Criterion® was more helpful than the instructor's feedback. The

majority of the participants disagreed with the aforementioned item. Figure 11 below shows detailed responses of the participants in Group 3 to the post-questionnaire items in sub-section A concerning the writing skill in the Advanced Writing course.

Figure 11

*Students' Responses on Post-Questionnaire Items (Sub-section A)*
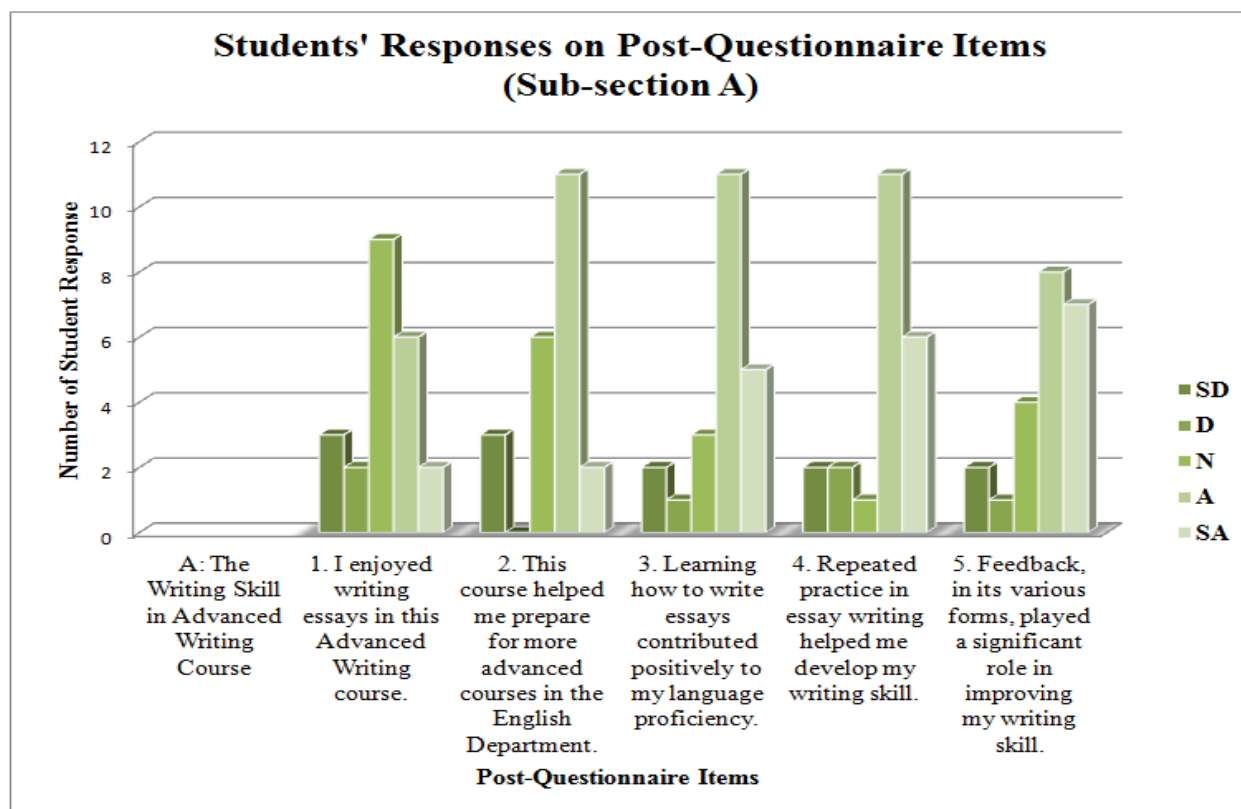
It can be noticed that nine out of 22 participants had a "neutral" opinion for Item 1 in terms of having enjoyed the Advanced Writing course. Nevertheless, the majority (50%) agreed with Items 2 and 3 which note that the aforementioned course helped prepare them for more advanced courses offered by the English Department and that learning how to write essays contributed positively on their language proficiency. Not to mention, most of the participants (11 out of 22) agreed with Item 4, acknowledging that repeated essay writing practice assisted the development of their writing skills. As for Item 5, eight participants agreed and seven participants strongly agreed with the fact that feedback played an important role in improving the

writing skill. Figure 12 below highlights the students' responses on the post-questionnaire items of sub-section B regarding the automated essay scoring and feedback software, Criterion®.

Figure 12

Students' Responses on Post-Questionnaire Items (Sub-section B)
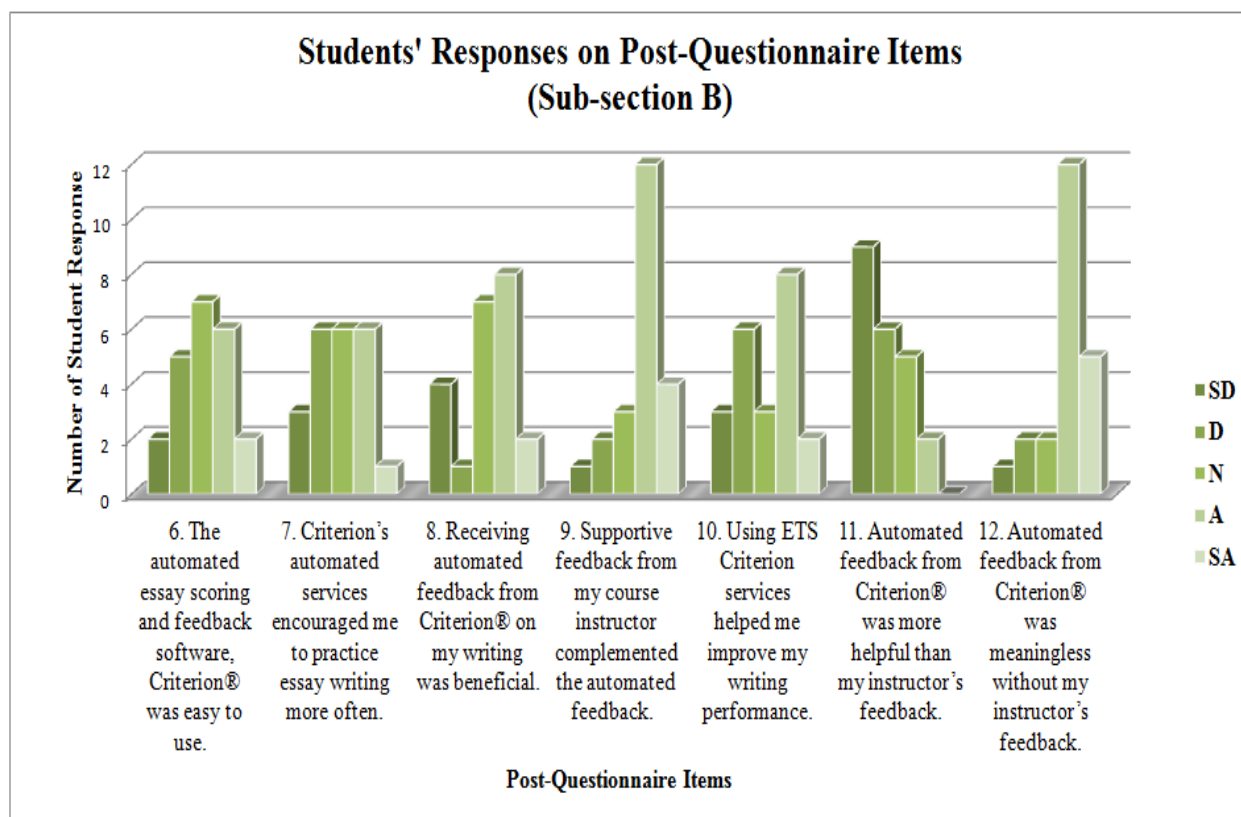
It can be seen from Figure 12 that the opinions of most of the participants, after using Criterion®, differed from those reported in the pre-questionnaire. For Item 6, the participants had mixed opinions about the ease of using the software; nine out of 22 participants had a neutral say, five disagreed, and six agreed. Similarly, for Item 7, six disagreed, six had a neutral opinion, and six agreed with the notion that Criterion® encouraged them to practice essay writing. Adding to that, eight participants reported that receiving automated feedback on their writings was beneficial. For Item 9, more than half of the group said that manual feedback from the course instructor complemented the automated feedback of Criterion®. Likewise, the majority (36%) indicated that ETS Criterion® services helped them improve their writing performance.

As for Items 11 and 12, the participants' opinions matched up with their expectations in the pre-questionnaire regarding the effectiveness of both automated and manual feedback. Nine participants reported that they strongly disagreed with Item 11 in the sense that automated feedback was more helpful than manual feedback from the course instructor. Whereas, 12 participants agreed that feedback from Criterion was meaningless without the course instructor's feedback. Figure 13 below indicates the opinions of the participants for the remaining items in sub-section C.

Figure 13

Students' Responses on Post-Questionnaire Items (Sub-section C)
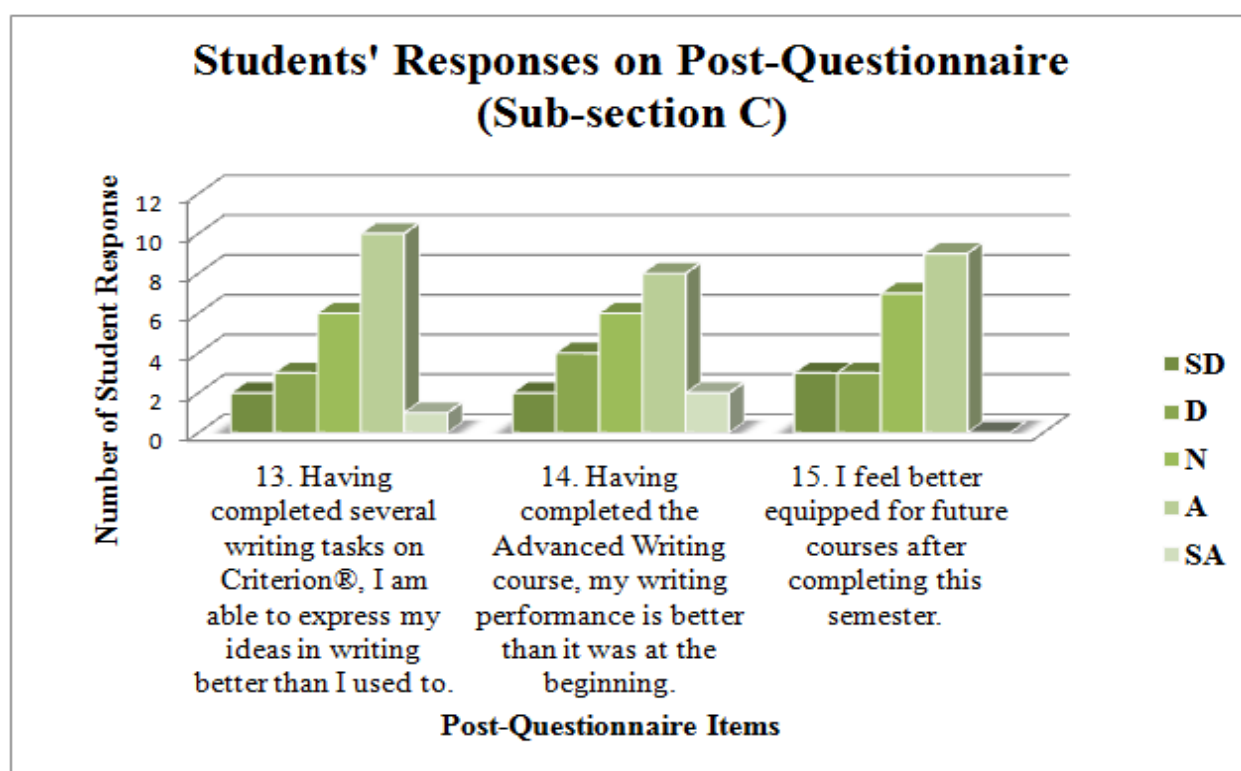
From the data exhibited in Figure 13, it is clear that ten participants agreed with Item 13; eight agreed with Item 14; and nine agreed with Item 15. Generally speaking, the completion of tasks on Criterion®, the Advanced Writing course requirements, and the Spring semester all had a favorable impact on their writing competencies and preparedness for future courses. In order to compare two population means by pairing the responses of the same sample in two different time

settings (before and after a course of action, in this case, utilizing automated scoring and feedback), a Paired-Samples t-Test was conducted. The equality of the pre and post-questionnaire means ($\mu1$, $\mu2$) can be tested via the following hypotheses:

1. H_0 Null Hypothesis: There is no difference ($\mu1 = \mu2$) between the responses of the participants "before and after" being exposed to the automated essay scoring and feedback, Criterion® on average.

2. H_1 Alternative Hypothesis: The responses of the participants "before and after" being exposed to the automated essay scoring and feedback, Criterion® have different effects on average ($\mu1 \neq \mu2$).

The results are of the paired-samples t-test are shown in Tables 19, 20 and 21 below.

Table 19

Paired Sample Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	**Means for Pre-Questionnaire**	3.64	15	0.35	.09
	Means for Post-Questionnaire	3.25	15	0.49	0.13

Table 19 shows that by observing the Mean column, it can be understood that the responses of the participants in Group 3 before using Criterion® has 3.64 as the mean score. However, after using Criterion®, the mean score of the respondents in the post-questionnaire decreased to 3.25. The difference support H_1 which states that $\mu1$ is not equal to $\mu2$. The Standard Deviation column shows that the spread of the responses after the use of Criterion® was 0.49 which is larger than the spread of the responses before using the software 0.35. The Standard Error Mean, the estimate of the Standard Deviation of the sampling distribution of the

Mean, was .09 before the course of action which increased to 0.13 afterwards. Table 20 lists the

paired samples correlations for both questionnaires.

Table 20

Paired Samples Correlations

Pair 1	Means for Pre-Questionnaire & Means for Post-Questionnaire	N	Correlation	Significance
		15	.702	.003

Table 20 shows the Pearson Correlations Coefficient and its significant value. The test

was conducted to indicate whether the results found are reliable or not. The correlation of the

sample responses has an r-value of .702 and a p-value of .003. Since the p-value is less than .05,

it means that the responses differed after using Criterion®. Therefore the data is highly

correlated. Table 21 below confirms this claim by listing the data of the paired samples test.

Table 21

Paired Samples Test

		Mean	Std. Dev.	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	Means for Pre-Questionnaire & Means for Post-Questionnaire	0.39	0.35	.09	0.20	0.59	4.41	14	.001

Note.   t = t-value   df = degrees of freedom   sig. (2-tailed) = p-value

In Table 21, the Mean value displays the difference between the means of the participants' responses in the pre and post-questionnaires and that the mean of the pre-questionnaire is 0.39 higher than that of the post-questionnaire. The Standard Deviation column indicates that the standard deviation of all the responses is 0.35. The Standard Error Mean shows the differences in the Mean. The Mean difference which is 0.39 suggests that the data does not support the null hypothesis. The calculated t-value, which is the ratio of the mean (0.39) divided by the standard error mean (.09), is (4.41). The 95% confidence intervals indicates a 95% certainty that the true response difference in mean (0.39) lies between the lower interval value of (0.20) and upper interval value of (0.59). In addition, the t-value (4.41) is significant at .001 which is less than .05 at 14 degrees of freedom. Hence, it is safe to say that the responses of the participants in Group 3 have altered "after" using Criterion®. In this case, the alternative hypothesis can be accepted; whereas, the null hypothesis is rejected.

4.6 Results of the Open-Ended Questions in the Post-Questionnaire

As mentioned earlier, the third section of the post-questionnaire (Section C: Open-Ended Questions) presented three open-ended questions for the participants of Group 3 to answer. The same Grounded Theory Coding Procedures of Glaser and Strauss (2009) that were adopted to analyze qualitative data in the pre-questionnaire were used here for the post-questionnaire results. Question 1 focused on eliciting students' responses with regard to any noticeable improvement in their writing skill after being exposed to Criterion®. The line by line analysis of the data of Question 1 revealed that more than half (59%) of the students reported that they experienced writing development in the areas of spelling, grammar, essay-writing practice, error reduction, and organization. Table 22 below summarizes the frequencies and percentages of students' responses towards Writing Development Post Automated Scoring and Feedback from Criterion®.

Table 22

Participants' Responses towards Writing Development Post Automated Scoring and Feedback from Criterion®

No.	Response	Frequency	Percentage
1.	Spelling	9	32%
2.	Grammar	7	25%
3.	Essay-Writing Practice	5	18%
4.	Error Reduction	4	14%
5.	Organization	3	11%
	Total	**28**	**100%**

As shown in Table 22, the most recurring response relevant to writing development after using Criterion® was *spelling* with a frequency of 9 (32%) and followed by seven cases of improvement in *grammar* (25%). Five responses indicated improvement in essay-writing practice which constituted 18% of the total number of responses; whereas, *error reduction* and *organization* had frequencies of 4 (14%) and 3 (11%) respectively. On the contrary, the remaining nine participants (41%) asserted that they did not experience any improvement with respect to the writing skill after using Criterion®. The frequencies and percentages of the students' responses which justified the ineffectiveness of Criterion® in terms of developing their writing skill are presented in Table 23 below.

Table 23

Participants' Responses towards the Ineffectiveness of Criterion® in Developing the Writing

Skill

No.	Response	Frequency	Percentage
A. Feedback			
1.	Unclear feedback	6	25%
2.	Difficult to understand	6	25%
3.	No explanation	5	21%
B. Software Usability			
4.	Time-consuming	4	16%
5.	Boring	3	13%
	Total	**24**	**100%**

It can be seen from Table 23 above that the justifications behind the ineffectiveness of

Criterion® in developing the writing skill from the participants' perspective were coded in

relation to feedback and software usability. The most repeated responses with respect to the

feedback that Criterion® offered were *unclear feedbac*k and *difficult to understand* each

recurring 6 times and both totaling a percentage of 50. Another response with a frequency of 5

was that the software provided *no explanation* on how the students can better their writings. In

terms of software usability, the response *time-consuming* had a frequency of 4 (16%). Last but

not least, the participants highlighted that operating the software was boring. The aforenamed

response occurred a total of 3 times (13%).

Question 2 aimed at exploring the participants' takes on recommending the use of

Criterion® for future course at Hebron University. Thirteen out of 22 participants did not

recommend Criterion® for future use due to its poor performance. The analysis of data revealed

that the majority of the students showed negative attitudes towards the performance of the automated engine. The most recurring responses include the following: (1) time-consuming, (2) boring, (3) difficult to operate, (4) incomplete feedback, and (5) no plagiarism detection. Table 24 below summarizes the frequencies and percentages of students' responses.

Table 24

Participants' Responses towards the Poor Performance of Criterion®

No.	Response	Frequency	Percentage
1.	Incomplete Feedback	7	32%
2.	Time-Consuming	5	23%
3.	Difficult to Operate	5	23%
4.	Boring	3	13%
5.	No Plagiarism Detection	2	9%
Total			**22**

As shown in Table 22, the most recurring response explaining the poor performance of Criterion® was *incomplete feedback* with a frequency of 7 (32%). The second most recurring responses were *time-consuming* and *difficult to operate* each having a frequency of 5. It can also be seen in the table above that there were three instances (13%) where the participants gave the response *boring* to describe the software. The response of *no plagiarism detection* had the least frequency (2) and a small percentage of 9.

Despite the fact that 59% of the participants were not in favor of Criterion's automated services, the remaining 41% (nine participants) recommended the software based on their personal experiences. Their responses were categorized in relation to the positive features of the software including: (1) writing practice, (2) teacher comments, and (3) immediate results. Table 25 below indicates the frequencies and percentages of the aforestated responses.

Table 25

Participants' Responses towards the Positive Features of Criterion®

No.	Response	Frequency	Percentage
1.	Writing Practice	5	46%
2.	Teacher Comments	4	36%
3.	Immediate Results	2	18%
Total		**11**	**100%**

As shown in Table 25 above, there were 5 instances recorded where participants gave the

response *writing practice* to explain why they recommend Criterion®. In addition, the second

most recurring response was that of *teacher comments* given a frequency of 4 (36%). The final

response of *immediate results* had the least frequency of 2 and a percentage of 18. The last open-

ended question of the post-questionnaire allowed the participants to write down any additional

comments of their own. Only 8 participants wrote comments sharing their emotional responses

towards Criterion®. The responses included the following: (1) liked, (2) enjoyed, and (3) hated.

Table 26 below shows the frequencies and percentages of the students' emotional responses.

Table 26

Participants' Emotional Responses towards Criterion®

No.	Response	Frequency	Percentage
1.	Hated	4	50%
2.	Enjoyed	2	25%
3.	Liked	2	25%
Total		**8**	**100%**

As can be seen in the table above, the most frequent response was that of *hated* which

occurred 4 times (50%). This means that the participants had strong negative emotions towards

the use of the automated tool. Whereas, the remaining two responses of *enjoyed* and *liked* occurred twice each.

4.7 Results of the Semi-Structured Interview

For the semi-structured interview, ten participants (8 females and 2 males) were chosen based on their negative responses on the post-questionnaire towards Criterion®. They were asked seven questions (See Appendix F) along the lines of the statements that received either a 'disagree' or 'strongly disagree' response. The primary aim of the semi-structured interview was to follow up with the students' responses and to better understand the underlying reason(s) behind their opinions. With their permission, the responses were tape recorded and the participants were assured that their responses will remain confidential. The results were analyzed via the Grounded Theory Coding Procedures and students' opinions regarding their responses on the post-questionnaire are reflected in representative quotations take from their interviews. To ensure student confidentiality, pseudonyms were used to refer to the participants. Furthermore, extra explanation was provided by the researcher in square brackets when needed. In this section, the questions of the semi-structured interview are listed and followed by some scripts of the students' responses and some follow-up questions.

One of the most surprising responses which students indicated in relation to the utilization of Criterion® was that it was difficult. Though the researcher gave the students in Group 3 an orientation on how to access the software and make sense of its features, technical difficulties were impossible to avoid. In Except 1 below, Sarah expressed that she faced some obstacles when she tried signing into her account for the first time. She lost the piece of paper which had her account password and was not able to sign in. Despite, several unsuccessful attempts to change her password, she contacted the researcher by email and requested assistance.

Excerpt 1

Interviewer: You mentioned in the post-questionnaire that Criterion® was difficult to utilize, how so?

Sarah: I had problems with signing-in and it was complicated to create a new password so I asked for help from you.

In Excerpt 2, Ali confessed that he was lazy to use Criterion® because it takes quite some time to get acquainted with the software itself. He mentioned that he and his fellow course mates were accustomed to using an online-learning platform, known as Google Classroom, where they can complete academic activities (assignments, quizzes, tests) in a paperless manner. He added that upon using Google Classroom he would receive notifications via email to remind him of assignment deadlines and important quiz or test dates. On the contrary, he did not receive any of that during his use of Criterion®.

Excerpt 2

Interviewer: Why was Criterion® difficult to use in your opinion?

Ali: I need more time to become familiar to the software. It does not give notifications for assignments on email.

Interviewer: Remember during the orientation, we mentioned that all the upcoming assignments and due dates can be found in the "Notices" Section?

Ali: Yes, but only if we sign in we can see that, but it does not send email that we have an assignment to finish like Google Classroom reminds us on email that we have a quiz or class work.

When the researcher asked the second interview question asking the participants to expand on how Criterion's automated services fail to encourage them to practice writing more often, Fatima said that the whole process of typing essays online was time-consuming and that

she preferred doing so on paper. In Excerpt 3 below, Fatima opened up about other discouraging factors such as outdated icons and the lack of animations and graphics.

Excerpt 3:

Interviewer: In what way(s) did Criterion's automated services fail to encourage you to practice essay writing more often?

Fatima: It takes a long time to type essays in English.

Interviewer: Meaning to say that you are slow at typing in general?

Fatima: No, I am fast [at] typing in Arabic when I chat with friends. I am slow in [typing] English. Also, the software icons are outdated like old-fashioned.

Interviewer: Can you elaborate more on that?

Fatima: The homepage is dull and boring. It does not have modern graphics and animations. That's why [it] is not interesting for me.

The third interview question aimed at uncovering the underlying reason behind the participants' claims which indicated that automated feedback from Criterion® was not beneficial. In Excerpt 4 below, Abeer stated that Criterion® was not able to track all the errors in her essays. She added that Criterion® was programmed to trace common errors by default without giving any attention to interlingual errors sourced from the student's native language.

Except 4

Interviewer: In what sense was receiving automated feedback from Criterion® on your writing not beneficial?

Abeer: Only the common errors were highlighted by the software, not the delicate or specific errors.

Interviewer: Can you clarify what you mean by "delicate/specific" errors?

Abeer: Like translating from Arabic, the software doesn't understand Arabic so it don't [does not] find errors from Arabic.

Furthermore, Question 4 addressed the notion that manual feedback provided by the course instructor did not complement the automated feedback of Criterion®. In Excerpt 5, Nuha informed the researcher of an incident where Criterion® gave her a score of 5 out of 6 on an essay without highlighting any errors. However, when her course instructor reviewed her work, he provided his own feedback for the numerous errors traced. This incident caused frustration for Nuha because she was excited after receiving a high mark, but was later disappointed to find many pitfalls in her essay.

Excerpt 5

Interviewer: Why did the manual feedback from your course instructor not complement the automated feedback?

Nuha: Criterion® give me a grade of 5 out of 6 without feedback but my instructor said I have many mistake [s].

Interviewer: Why do you think your instructor disagrees with the automated feedback of Criterion®?

Nuha: Maybe because our teacher grade us from what he teach in class and Criterion® feedback from the rubric.

Interviewer: We reviewed the rubric together in class during the orientation and it was highlighted that scores of 5 and 6 are given to essays that are adequate but may have occasional errors. So, why were you frustrated with your instructor's feedback?

Nuha: Because I was very excited at first then when I see his comment[s] he said I need to write again [rewrite] many things because they violate what we learned in class. I was frustrated.

For Question 5 of the semi-structured interview, the researcher asked the participants to elaborate on why they think that Criterion® did not help them improve their writing performance. In Excerpt 6, Aseel mentioned that Criterion® was not able to track all the errors in her essays and there were some instances where it assigned a low mark without highlighting

neither the problems nor how to fix them. Therefore, she had to depend on her instructor's comments while making revisions.

Excerpt 6

Interviewer: From your personal experience in using the services provided by ETS Criterion®, why do you think the software did not help you improve your writing performance?

Aseel: Because Criterion® can't find all errors and sometimes it give me a low mark without any comments or feedback.

Interviewer: What did you do in those cases?

Aseel: I waited for my teacher to give me feedback so I can edit and submit my assignment.

In Excerpt 7, another participant, Jana, gave a different statement clarifying why the automated tool did not assist her in developing her writing. Jana referred to Criterion® as a machine, to be exact a robot, which cannot be fully trusted like the course instructor when offering feedback.

Excerpt 7

Interviewer: Why did Criterion® not help you improve?

Jana: You know it is like a robot. I cannot believe the feedback like [that of] my teacher.

Interviewer: What do you mean by "robot"?

Jana: A computer machine.

As for the sixth question, the researcher asked the participants why they think that automated feedback was not as helpful as their instructor's feedback. In Excerpt 8 below, Rola asserted that automated feedback was not as effective as the manual feedback from the course instructor because machines cannot be programmed or tweaked to function intelligently in every possible situation. In addition, Rola believes that feedback from the course instructor is more accurate than automated feedback.

Excerpt 8

Interviewer: Why do you think that the automated feedback from Criterion® was not more helpful than your instructor's feedback?

Rola: It is a machine and it cannot know everything. It needs more improvement. Feedback from the teacher is much better always because it more accurate.

To answer the same question, as can be seen in Excerpt 9 below, Sama pointed out that there were many cases where she and her course mates received incomplete feedback on their essays after using Criterion® and their course instructor had to reread their essays reevaluate them. Therefore, she believes that it is counterintuitive to depend on a software in performing a specific task and then having to double check what it did. In other words, it would be best to depend on the course instructor when it comes to giving feedback.

Excerpt 9

Interviewer: Why isn't the automated feedback more helpful?

Sama: Because my classmates and I received incomplete feedback from Criterion® on our work.

Interviewer: But your teacher gave you more feedback, right?

Sama: Yes, he found many errors in our essays. So, he did everything.

Interviewer: Okay, so you are implying that had your teacher graded the essay and gave his own feedback to begin with, you would not receive incomplete feedback?

Sama: Yes, because the teacher is the best at giving us feedback.

Last but not the least, the objective of the final question in the interview was to check why some participants disagreed with the statement that portrayed automated feedback from Criterion® as meaningless without the instructor's feedback. In Excerpt 10, Mohammed explained that Criterion's feedback was in fact helpful in terms of spotting errors related to spelling and grammar. Furthermore, he mentioned that the results were immediate and that it would be considered dishonest to claim that the feedback was completely meaningless.

Excerpt 10

Interviewer: Kindly elaborate on why you disagreed or strongly disagreed with the following statement: Automated feedback from Criterion® was meaningless without my instructor's feedback?

Mohammed: Feedback from Criterion® was good and it helped me find spelling mistakes and grammar mistakes.

Interviewer: That said, you do not think that it is meaningless without your instructor's comments?

Mohammed: I know it did not found [find] all my mistakes like my teacher; but to be honest, it was very fast to give a grade and feedback.

Not to mention, in Excerpt 11, Fatima made clear why she does not think that Criterion's feedback was meaningless. She stated that the feedback she got, despite its shortfalls, encouraged her to practice writing and find solutions on how to better her work.

Excerpt 11

Interviewer: Why did you think that the feedback wasn't meaningless without your instructor's feedback?

Fatima: Because I understood it and I learned from my mistakes.

Interviewer: Do you think that automated feedback from a machine is more reliable than your instructor's feedback?

Fatima: Of course not, my teacher is more reliable; but Criterion® helped me a lot to practice at home and learn from my mistakes and develop my writing skill better.

V. Discussion of Results

In this chapter, the results of the previous chapter will be discussed in light of the research questions and proposed hypotheses.

5.1 Discussion of the Research Questions and Hypotheses

Research Question (1): Are there any statistical differences in writing performance between and within groups of participants due to the type of feedback they received?

To answer this question, the researcher compared the results of the pre-test and post-test for all 3 groups to see if the treatment they were given—oral, written, or automated plus manual feedback—has lead to any noticeable improvement in the participants' writing skill. The participants of Group 2, who received written feedback from their instructor, showed progress to a great extent in their writing skills which was reflected in their scores on the post-test. Their performance improved from an initial pre-test mean score of (2.91) to a post-test mean score of (3.77). It is worth mentioning that out of the three groups, Group 2 had the lowest mean score in the pre-test; nevertheless, their degree of improvement (0.86) surpassed that of Groups 1 and 3. This finding is in harmony with that of Binglan and Jia (2010); Seiffedin and El-Sakka (2017); Sermsook, Liamnimitr, and Pochakorn (2017); and Tee and Cheah (2016) who asserted that teacher written feedback is beneficial to the correction of errors and at the same time assists students in overcoming the challenges of writing. Similarly, the outcome was similar to the conclusions of Briesmaster and Etchegaray (2017) who made clear that teacher intervention is key in helping students become better writers; and therefore, minimizing their errors.

Furthermore, the participants of Group 3, who obtained automated scores and feedback from Criterion® as well as manual feedback from their course instructor, showcased improvement in their writing performance. Group 3 achieved a pre-test mean score of (3.03) which escalated to a post-test mean score of (3.64). This finding is in line with that of Aluthman (2016) who reported that students who received automated scores and feedback from Criterion®

improved their overall writing performance with a reduction in error count. Similarly, it is in agreement with the findings of Tsuda (2014) who stated that Criterion® played a significant role in assisting Japanese EFL students to write more effective essays and was very helpful in developing their writing skills.

Unfortunately, Group 1 did not show any signs of improvement in the post-test despite scoring highest in the pre-test with a mean score of (3.05). Instead, the post-test mean score of the participants in Group 1, who received oral feedback from their instructor, dropped to (2.85). This finding contrasts with the claims of Purnawarman (2011) and Zahida, Farrah, and Zaru (2014), who found that teacher feedback, regardless of any type of feedback strategy, contributed to the development of students' writing in reducing their errors. In this case, oral feedback was not as effective as written and or automated plus manual feedback, since the participants of Group 1 did not exhibit any signs of development in terms of writing performance at the end of the semester.

Hypothesis 1: The statistical differences in the writing performance of students who received automated feedback supported by manual feedback is more significant in comparison to those who obtained written feedback and oral feedback.

As mentioned above, the researcher hypothesized that the writing performance of participants who received automated feedback supported by manual feedback (Group 3) is more significant in contrast to the performance of the groups that received oral or written feedback. However, the results of the post-test revealed that Group 2 had a slightly more significant statistical difference in performance after receiving written feedback. Despite the fact that the post-test mean scores of Group 2 (3.77) and Group 3 (3.64) are not far from each other, it is clear that H1 is refuted.

Research Question 2: Is there a relationship between participant level and performance in the post-test?

Participant level was treated as a variable to check if it influenced the participants' performance in the post-test. As previously stated, the participants of the study belonged to 3 different levels—2nd, 3rd, and 4th year-level. To answer the aforementioned research question, the researcher conducted a Pearson Correlation test to explore whether the students' levels affected their scores. The results of the test revealed a correlation coefficient or r-value of (-.358) which reflects a negative relationship between the levels of the participants and the scores they obtained in the post-test.

Hypothesis 2: There is a positive correlation between participant level and their performance in the post-test; in other words, as the level of participants increases, their performance increases accordingly.

Prior to conducting the study, the researcher speculated, as seen in H2 above, that there is a positive correlation between variable 1 (participant level) and variable 2 (performance). Generally speaking, it is assumed that the higher the level of the participants, the higher their scores will be. The researcher hypothesized that 3rd and 4th year learners will outperform 2nd year students who will take the Advanced Writing course for the first time. However, the results of the post-test were quite shocking and contrary to the researcher's expectations since the majority of the students who achieved scores of 4 and over are namely 2nd year students. That said, participants of 3rd and 4th year levels, who are either behind schedule or have decided to drop the Advanced Writing course during previous years and retake it during their junior or senior year, are rather weak learners and have not acquired the appropriate skills to achieve higher. Given that the findings are not in harmony with the initially-formulated hypothesis, it is safe to say that H2 is refuted.

Research Question 3: What is the effect of utilizing Criterion® on developing English major students' writing competencies at Hebron University?

As previously stated, the participants of Group 3 were introduced to the automated essay scoring and feedback software, Criterion® at the beginning of the Spring semester of the academic year 2018-2019. The participants were given 5 writing tasks on various topics (See Appendix P) by their course instructor to complete using Criterion® throughout the semester. The participants browsed the topics of the assigned tasks, created an outline for each essay, typed their responses to the prompt, submitted their work on the software, and received automated scores and feedback. In addition, to the automated feedback generated by Criterion®, the participants received customized manual feedback from their instructor to supplement the automated feedback. The results of the post-test unfolded that utilizing Criterion® had a positive effect in terms of developing the writing competencies of Palestinian EFL learners at the university level.

Criterion® gave the participants of Group 3 the opportunity to practice writing outside the classroom and in the convenience of their very own homes. It provided writing diagnostics relevant to 5 main categories addressing (1) organization and development, (2) grammar, (3) usage, (4) mechanics, and (5) style. Furthermore, automated feedback was classified into more than 30 sub-categories (See Appendix Q). Likewise, Criterion® allowed for productive interaction between students and their course instructor with the availability of content-related instructor feedback which was provided manually in the comments section (See Appendix O). Most importantly, the participants were able to receive immediate scores without having to wait and made use of the diagnostic feedback at their disposal. These results are in line with those of Aluthman (2016) and Tsuda (2014) who confirmed that the automated engine, Criterion®; generally speaking, has a positive impact on enhancing students' written performance and assisting them in their writing endeavors. Moreover, the researchers commend the availability of

the aforenamed automated features since they motivate students to learn from their errors and make corrections where necessary; in other words, practice writing more often.

Hypothesis 3: The utilization of Criterion® assists students in developing their writing competencies through repeated practice.

The researcher conjectured that the utilization of the automated engine, Criterion®, assists students in developing their writing competencies. After observing the diversified automated features offered by Criterion® and witnessing a significant development in writing performance by a difference of (0.61) between the pre-test administered at the beginning of the semester and post-test at the end, it could be argued that the automated tool facilitated a significant development in writing competency to take place. Having taken all these points into consideration, H3 is accepted.

Research Question 4: Are there any differences in student attitudes before and after being exposed to automated scoring and feedback?

One of the primary goals of the present study was to explore if there were any differences in student attitudes before and after being exposed to Criterion® and its computerized properties. After reviewing the results of the pre-questionnaire which was distributed to the participants of Group 3 at the beginning of the semester, the researcher found that the majority of the participants were looking forward to receiving automated scores and feedback from Criterion®. Likewise, the subjects believed that Criterion® will encourage them to practice essay writing more often and they anticipated acquiring supplementary manual feedback from their course instructor. Adding to that, the respondents wrote in the open-ended questions section of the pre-questionnaire that they anticipated improvement in spelling, grammar, and vocabulary; hoped to experience a reduction in error count; and gain proficiency in essay-writing.

On the contrary, after the researcher distributed the post-questionnaire at the end of the semester to elicit the attitudes of the participants post their exposure to Criterion®, the results

revealed that there was a clearcut difference with a p-value of .003 in the attitudes of the respondents after their automated experience. The participants revealed mixed opinions regarding the software, its accessibility, and the encouragement it provided to practice essay writing. Nevertheless, the majority of the participants reported that receiving on-the-spot automated feedback on their writings was beneficial and that manual feedback from the course instructor complemented the automated feedback of Criterion®. Likewise, most of the participants asserted that the overall features of Criterion® allowed them to develop their writing performance. Additionally, the participants' opinions in the post-questionnaire were in harmony with their expectations in the pre-questionnaire regarding the efficacy of both automated and manual feedback. Nevertheless, the participants declared that automated feedback was not as helpful as the manual feedback from the course instructor since manual feedback helped spot more errors and addressed advanced writing strategies. Among other things, most of the participants agreed that feedback from Criterion® was meaningless without the course instructor's feedback.

As seen in the previous chapter, in the open-ended questions of the post-questionnaire, more than half of the participants (59%) indicated that they experienced improvement in spelling, grammar, essay-writing practice, error reduction, and organization. Along with improvement in the aforenamed areas, the participants added that they were given the opportunity to practice writing essays at home and learn from their errors. On the other hand, the remaining 41% of participants had a negative attitude towards Criterion® and writing improvement. They brought forth that Criterion® did not highlight all their errors and that it did not provide adequate explanations for such errors. Similarly, they notified the researcher that using Criterion® was time-consuming, boring, difficult to understand, and asserted that it gave incomplete feedback and lacked plagiarism-tracking features. To be exact, 59% of the

participants of Group 3 did not recommend Criterion® and its features; whereas, the remaining 41% advocated its use and gave some suggestions for future software development.

Hypothesis 4: Students reflect positive attitudes towards using Criterion® and being exposed to a new form of feedback.

Before conducting the present study, the researcher assumed that students reflect positive attitudes towards using Criterion® and being subjected to a contemporary form of feedback. Albeit, the greater part of the group disclosed their negative viewpoints after utilizing the automated engine for an entire academic semester. Consequently, hypothesis 4 is rejected.

Research Question 5: Do the results of the study suggest that manual feedback can be replaced with automated feedback generated by artificially intelligent machine learning technologies?

In hopes to answer the final research question of the present study and deepen the investigation concerning the effectiveness of employing the artificially intelligent machine learning technology, Criterion®; the researcher conducted a face-to-face semi-structured interview with ten participants who yielded negative responses in the post-questionnaire. The main goal of performing the semi-structured interview with the participants was to follow through with the discussion about automated scoring and feedback and to make sense of the negative attitudes towards the engine which the study revolves around.

The participants acknowledged that in order to utilize Criterion® properly, they needed more time to acquaint themselves with the software and its properties. Some participants mentioned that Criterion® was difficult to use and clarified that they experienced technical complications while signing-in and creating new passwords. Another issue reported by the participants was that Criterion® accounts were not linked to their personal emails; as a result, they were not able to receive email notifications highlighting due dates for writing assignments.

Moreover, the interviewees elaborated on Criterion's failure to encourage frequent essay writing practice stating that it is time-consuming to plan, type, and re-type essays on the software and that they preferred doing so on paper. Additionally, the graphics and icons displayed in the engine are quite dull and lacked animated features which attract users. Most importantly, when the participants were asked to open up about the ineffectiveness of receiving automated feedback from Criterion®, the majority of the participants stated that the software did not detect all their errors and when it did, there was no explanation or advice on how to fix the problem. This finding is in line with Tsuda (2014) who stated that after implementing Criterion® in a Japanese college; he found that "there is not much they [the students] can do to receive sufficient instruction or advice to improve their essay. Therefore, I often give advice on their printed essays" (p. 35-36). That said, manual feedback is essential since automated feedback does not suffice with respect to what course of action needs to take place to mend problematic essays.

Furthermore, students proclaimed that there were countless instances where they submitted their essays for evaluation and received scores of 5 or 6 (out of 6) without any highlighted errors (See Appendix R & S). Later on, when the instructor reviewed their essays so as to provide more feedback, he spotted numerous pitfalls and gave his own comments accordingly. This was the case with researchers Wang and Brown (2007) who compared the performance of an automated essay evaluation tool called IntelliMetric™ with that of human raters. The researchers stated that IntelliMetric™ had a tendency to assign higher scores on students' essays than human raters. "Assigning a higher score to a student's essay than what the essay qualifies directly impacts how well the student can perform in the course" (Wang & Brown, 2007, p. 21). In other words, when automated tools designate high scores on essays, students will be tricked into believing that they possess the necessary skills to satisfy course requirements when in fact, they are incompetent.

Another complaint given by the interviewees was the fact that Criterion® was programmed to spot common errors and not interlingual errors (i.e. article errors, preposition errors, and word order) whose original source was the students' native language, Arabic. This finding is in line with that of Burstein, Chodorow, Leacock (2003) who explained that Criterion's algorithms need further improvement and new features such as "the detection of grammatical errors that are important to specific native language groups" (p. 6).

Most of the participants asserted that automated feedback was not more helpful that the manual feedback given by the instructor in the comments section of every assignment. Based on their experiences, Criterion® cannot replace the course instructor when it comes to scoring and feedback because it lacked accuracy in detecting errors and consistency in assigning scores. A great deal of the errors found by Criterion mainly focused on spelling (See Appendix T), subject-verb agreement (See Appendix U), missing or extra articles (See Appendix V), and missing initial capital letters in sentences (See Appendix W). Not much attention was given to errors relevant to style and organization and development. The course instructor had to provide his own feedback to help students in such areas. These findings are in accord with Aluthman (2016) who reported that the effectiveness of automated essay evaluating tools primarily reside at the level of grammar, mechanics, and usage.

Hypothesis 5: Manually-generated scores and feedback cannot be replaced with automated feedback supplied by Criterion® since the software was designed to provide supplemental feedback to guide students as they practice writing.

Taking into account the fifth hypothesis brought forth by the researcher and the responses of the interviewees, it can be concluded that manually-generated scores and feedback cannot be replaced by those of Criterion®. That is true since the engine was designed to offer supportive feedback as students write essays and make revisions. It is noteworthy to articulate that machines can only do so much to assist students as they write. Human intervention paves the path for

students to employ cognitive thinking strategies while drafting their essays and make sense of the

diagnostic feedback at their disposal. That stated, hypothesis 5 is accepted.

VI. Conclusions and Recommendations

6.1 Conclusions

The present study investigated the overall impact of utilizing automated essay scoring software on developing Palestinian undergraduate student's writing competencies. First, it compared the effect of three varying types of feedback—(1) oral, (2) written, and (3) automated plus manual feedback—provided for three Advanced Writing sections at Hebron University and their effectiveness in developing the writing skills of Palestinian EFL learners. Second, it checked if there was a relationship between participant level and performance. Third, it examined the effect of utilizing Criterion® on developing English major students' writing competencies at Hebron University. Fourth, it explored if there were any differences in student attitudes before and after being exposed to automated scoring and feedback. Last but not the least, it addressed the efficiency of using automated feedback supported by manual feedback versus traditional written feedback on developing students' writing skills and the ongoing debate pertinent to whether manually-generated scores and feedback can be replaced by artificially intelligent machine learning technologies, namely ETS Criterion®.

The findings of the study uncovered that feedback plays an influential role in EFL/ESL writing and it is evident through the various studies which were conducted on feedback and its impact on student performance. Feedback sheds light on the strengths and weaknesses of students' written productions and helps them avoid the pitfalls associated with writing. Despite its effectiveness, it became clear that not all types of feedback are equally beneficial. Some types have a more positive impact than others in terms of assisting English language learners in developing their writing competencies.

That said, it can be argued that out of the three varying types of feedback—oral, written, and automated plus manual—written feedback yields significantly better writing performance outcomes if it is done appropriately and with caution on the teacher's part. However, it is without

doubt that the feedback-writing process still is and will always be time-consuming. On the other hand, automated feedback that is generated by artificially intelligent machines seems to possess advantages of its own in the sense that it encourages learners to take charge of their own learning and it spares students from having to wait patiently for their scores and feedback; yet, the extent to which teachers can depend solely on such automated tools for evaluation is still in question. After utilizing Criterion® and exploring its holistic scoring and automated feedback features, the researcher found that human intervention is key to assuring accuracy and quality feedback. As a result, it is safe to say that automated essay evaluation tools cannot replace human raters, but if teachers wish to adopt a writing as a process approach as they teach writing courses and assign their students weekly assignments for extra practice, they can resort to automated software as teaching aids.

It is true that the automated essay evaluation software, Criterion®, may not reflect ultimate performance and accuracy, it has been found that it performs well in spotting errors related to spelling, grammar, and mechanics; in other words, basic writing skills. As for more advanced writing skills such as organization, development, and style; teacher expertise is sought after. Though it may not completely solve the teacher dilemma of grading essays in a short period of time at the expense of giving detailed feedback; nonetheless, it can ease the evaluation process to some extent by allowing teachers to buy extra time for evaluation. Normally speaking, when teachers have numerous papers to grade and teach more than one course at a time, it is expected of their students to twiddle their thumbs until grades are announced and papers are returned regardless of how long that may take. Conversely, if teachers asked their students to use Criterion®, for instance, or any other software which offers automated scores and individualized feedback; students will receive temporary evaluation and scores simply by a push of a button. This way, students can examine the feedback given and seek ways to adjust their writings.

Meanwhile, teachers can gradually give their feedback to students on their work until there are no more essays to be reviewed.

Highlighting other advantages, it is noteworthy to state that Criterion® offers instructors with an archive of topics which they can select from and adjust the modes and levels of each writing task to suit the learners' needs. Aside from that, course instructors are free to create their own topics as they would normally do when creating paper-based assignments or designing exams. Furthermore, a recent addition to the software's features was added to allow instructors to keep track of their students' progress via reports which show their overall improvement as well as error patterns. Considering the availability of such functional specifications, teachers may not have to constantly worry in terms of rushing the feedback-writing process.

Despite the fact that utilizing automated engines seems promising to educators, it is of paramount importance to bear in mind the attitudes that students will reflect towards such automated tools. In retrospect, after exposing a group of Palestinian undergraduate students to Criterion®, the researcher gained full insight concerning their opinions and attitudes. The students were transparent during the interview and revealed negative attitudes towards Criterion® and its features. In light of their responses, it can be asserted that they were not in favor of using the software and likewise they did not recommend it for future courses given that they experienced technical difficulties and other drawbacks in programming.

6.2 Recommendations

In this section, the researcher proposes some recommendations to software developers, teachers, and highlights possible research areas for future studies.

6.2.1 Recommendations for Software Developers

The Educational Testing Service (ETS) is generally considered to be the largest private non-profit educational testing and assessment organization that has managed to maintain a positive public image worldwide. In its implementation of Criterion®, the company adhered to

its intended purpose that being providing holistic automated scores and feedback on student-written essays. Despite its favorable reputation and the possible benefits it can offer to students whose first language is English and non-native learners, the Criterion® software is not applicable to schools in the United States. It is reserved for the evaluation of standardized tests such as the Test of English as a Foreign Language (TOEFL) and the Graduate Record Examinations (GRE) which international students are required to take for admissions into most graduate schools in America. Nevertheless, after using Criterion® at one of Palestine's public universities for an entire academic semester and taking into account the negative attitudes of student users towards the software, some recommendations can be proposed to address the limitations which were discovered. As mentioned earlier, the primary aim of the present study was to utilize Criterion® in hopes to investigate the impact it had on developing the writing competencies of Palestinian EFL learners at the university level. Though the results of the study revealed that Criterion® assisted students in improving their writing performances, limitations are inevitable.

One of the main limitations of the software was the fact that it lacked a plagiarism-detection feature. It was clearly stated in the Frequently Asked Questions section found in the Criterion® User Manual that the software simply evaluates the submitted essay without "catching" plagiarism (p. 57). As a result, the researcher recommends the addition of plagiarism detection to the specifications of the software to avoid instances of academic theft. In addition, the researcher proposes that software developers perhaps can add a feature which enables the software to track interlingual errors which result from language transfer from L_1 to L_2. It became evident that Criterion® was programmed to highlight common intralingual errors which occur due to faults or the partial learning of a second language.

It would also contribute to the performance of the software, if there was consistency in error detection since there were several instances where scores would be assigned to certain essays without any highlighted errors. Another proposed suggestion for improvement is to

redesign the software graphics and include animated features for aesthetic purposes and user attraction. The researcher also recommends adding a function that allows the instructor to select individual characters (e.g. letters, numbers, symbols) and larger bodies of text (e.g. individual sentences and paragraphs) when providing manual feedback in the comments section since Criterion® only enabled the instructor to select unspaced words and punctuation marks (See Appendix X). Last but not the least, to ease the feedback viewing process, the researcher proposes that software developers allow students to browse automated feedback and manual feedback in the same window instead of having to move back and forth between the results section and comments section.

6.2.2 Recommendations for Teachers

The findings of this study suggest that in order for students to be able to develop their writing skills, they need to be provided with feedback that can equip them with an in-depth understanding of their errors and assist them in determining the actions that need to be taken to ensure the successful completion of their written tasks. Providing learners with feedback is time-consuming and tedious for teachers, especially when they have large classes. However, the researcher highly recommends that teachers make an effort in deciding which type of feedback is most suitable in terms of guiding students along the writing journey and that they take the time to offer such feedback to help students develop their writing competencies and produce well-written pieces in the foreign language. Moreover, if teachers decide to utilize automated essay evaluation software, they need to familiarize themselves with how such programs function and consider how they can be used as teaching aids to enhance students' writing skills through repeated independent practice. In addition, automated essay scoring tools can be used in the evaluation of admission exams at colleges or universities to provide common measures when comparing the writing levels of students who come from different academic backgrounds.

6.2.3 Recommendations for Future Studies

With the rising advancements in modern technologies and the popularity that automated essay evaluation tools are gaining from education reformers, further studies are needed to investigate the integration of such scoring engines in EFL/ESL contexts and test whether they can yield expedited and effective solutions for grading student-produced essays. In addition, the researcher recommends testing different automated scoring and feedback-generating software available to the public, comparing their effectiveness in enhancing students' writing skills, and suggesting ways for software improvement. Most importantly, it is highly recommended to conduct future studies that aim at providing key principles for educators on how to integrate automated scoring engines into foreign or second language settings with special attention given to writing classes.

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Appendix A

Pre and Post-Test Cover Sheet

Dear Participant:

My name is Zeiadee Khalil and I am an M.A. student at Hebron University. For my M.A. thesis, I am investigating the impact of utilizing automated essay scoring software on developing Palestinian undergraduate students' writing competencies.

Kindly provide your student number, indicate your academic year, and complete the attached task to the best of your ability. It is worth noting that your work and results will remain confidential and will not affect your course assessment. In addition, your student number and academic year will only be used to keep track of your progress throughout the semester. Your participation is strictly voluntary and you may refuse to participate at any time.

If you require additional information or have any questions, please feel free to contact me via the email listed below. Thank you very much for your cooperation.

Sincerely,
Zeiadee Marie Z. M. Khalil
e-mail: zeiadeekhalil@gmail.com

Appendix B

Pre-Test

Student Number: _____   **Date:** _____
Pre-Test

I. Directions: Please indicate your academic year by ticking the appropriate box below.

    a. ☐ 2nd year

    b. ☐ 3rd year

    c. ☐ 4th year

II. Write a well-developed expository essay (5 paragraphs) **on ONE of the given topics below. Your essay should consist of the following: (1) an introductory paragraph, (2) three body paragraphs, and (3) a concluding paragraph. Remember to present a clear thesis statement, support your ideas with examples, and use transitional expressions to guide the reader.**

1. Suggestions for Improving the English Department at Hebron University **OR** **2. Expectations of Using Google Classroom in Developing your Writing Skills**

Appendix C

Post-Test

Student Number: _____ **Date:** _____
Post-Test

I. Directions: Please indicate your academic year by ticking the appropriate box below.

    a. ☐ 2nd year

    b. ☐ 3rd year

    c. ☐ 4th year

II. Write a well-developed expository essay (5 paragraphs) **on ONE of the given topics below. Your essay should consist of the following: (1) an introductory paragraph, (2) three body paragraphs, and (3) a concluding paragraph. Remember to present a clear thesis statement, support your ideas with examples, and use transitional expressions to guide the reader.**

1. Improvement in Writing Skills after Advanced Writing Course **OR** **2. The Effectiveness of Using Google Classroom in Developing your Writing Skills**

Appendix D

Pre-Questionnaire

Student number: _____   **Date:** _____

Pre-Questionnaire

This questionnaire is designed to elicit students' attitudes towards the writing skill before being exposed to automated essay scoring and feedback generated by ETS Criterion®. Responses will remain strictly confidential and anonymous and will only be used for research purposes.

Section A: Demographic Profile

Please tick (✓) the appropriate box.

1. Gender: ☐ Male   ☐ Female

2. Age: ☐ 16-22   ☐ 23-30   ☐ 31 or older

3. Academic year: ☐ 2nd year   ☐ 3rd year   ☐ 4th year

Section B: Domains and Items of the Questionnaire

Indicate the extent to which you agree or disagree with the following statements by placing a tick (✓) in the appropriate box using the following scale:

(1) Strongly Disagree   (2) Disagree   (3) Neutral   (4) Agree   (5) Strongly Agree

No.	Statements	1	2	3	4	5
A: The Writing Skill in Advanced Writing Course						
1.	I think that I will enjoy writing essays in this Advanced Writing course.					
2.	This course will help me prepare for more advanced courses in the					

	English Department.					
3.	Learning how to write essays will contribute positively to my language proficiency.					
4.	I think that repeated practice in essay writing will help me develop my writing skill.					
5.	Feedback, in any of its various forms, plays a significant role in improving my writing skill.					
B: The Automated Essay Scoring and Feedback Software, Criterion®						
6.	I look forward to using the automated essay scoring and feedback software, Criterion®.					
7.	Criterion's automated services will encourage me to practice essay writing more often.					
8.	I anticipate receiving automated feedback from Criterion® on my writing.					
9.	I look forward to getting supportive manual feedback from my course instructor as well.					
10.	I think that using ETS Criterion services will help me improve my writing performance.					
11.	Automated feedback from Criterion® will be more helpful than my instructor's feedback.					

12.	Automated feedback from Criterion® will be meaningless without my instructor's feedback.					
C: Development in Writing Skills						
13.	After frequent essay writing practice on Criterion®, I think that I will be able to express my ideas in writing better than I used to.					
14.	By the end of this course, I think my writing performance will be better than it was at the beginning.					
15.	By the end of this semester, I will be better equipped for future courses.					

Section C: Open-Ended Questions

In a few words, please answer the following questions.

1. In what area(s) do you think you will improve after being exposed to automated scoring and feedback?

----

2. Write down your own comments, in case you have any.

Appendix E

Post-Questionnaire

Student number: _____   **Date:** _____

Post-Questionnaire

This questionnaire is designed to elicit students' attitudes towards the writing skill after being exposed to automated essay scoring and feedback generated by ETS Criterion®. Responses will remain strictly confidential and anonymous and will only be used for research purposes.

Section A: Demographic Profile

Please tick (✓) the appropriate box.

1. Gender: ☐ Male   ☐ Female

2. Age: ☐ 16-22   ☐ 23-30   ☐ 31 or older

3. Academic year: ☐ 2nd year   ☐ 3rd year   ☐ 4th year

Section B: Domains and Items of the Questionnaire

Indicate the extent to which you agree or disagree with the following statements by placing a tick (✓) in the appropriate box using the following scale:

(1) Strongly Disagree   (2) Disagree   (3) Neutral   (4) Agree   (5) Strongly Agree

No.	Statements	1	2	3	4	5
A: The Writing Skill in Advanced Writing Course						
1.	I enjoyed writing essays in this Advanced Writing course.					
2.	This course helped me prepare for more advanced courses in the English Department.					

3.	Learning how to write essays contributed positively to my language proficiency.					
4.	Repeated practice in essay writing helped me develop my writing skill.					
5.	Feedback, in its various forms, played a significant role in improving my writing skill.					
B: The Automated Essay Scoring and Feedback Software, Criterion®						
6.	The automated essay scoring and feedback software, Criterion® was easy to use.					
7.	Criterion's automated services encouraged me to practice essay writing more often.					
8.	Receiving automated feedback from Criterion® on my writing was beneficial.					
9.	Supportive feedback from my course instructor complemented the automated feedback.					
10.	Using ETS Criterion services helped me improve my writing performance.					
11.	Automated feedback from Criterion® was more helpful than my instructor's feedback.					
12.	Automated feedback from Criterion® was meaningless without my					

	instructor's feedback.					
C: Development in Writing Skills						
13.	Having completed an array of writing tasks on Criterion®, I am able to express my ideas in writing better than I used to.					
14.	Having completed the Advanced Writing course, my writing performance is better than it was at the beginning.					
15.	I feel better equipped for future courses after completing this semester.					

Section C: Open-Ended Questions

In a few words, please answer the following questions.

1. Has your writing skill improved after being exposed to automated scoring and feedback? If so, how?

----

2. Do you recommend Criterion® for future writing courses at Hebron University? Why or why not?

----

3. Write down your own comments, in case you have any.

Appendix F

Semi-Structured Interview Questions

1. You mentioned in the post-questionnaire that Criterion® was difficult to utilize, how so?

2. In what way(s) did Criterion's automated services fail to encourage you to practice essay writing more often?

3. In what sense was receiving automated feedback from Criterion® on your writing not beneficial?

4. Why did the manual feedback from your course instructor not complement the automated feedback?

5. From your personal experience in using the services provided by ETS Criterion®, why do you think the software did not help you improve your writing performance?

6. Why do you think that the automated feedback from Criterion® was not more helpful than your instructor's feedback?

7. Kindly elaborate on why you disagreed or strongly disagreed with the following statement: Automated feedback from Criterion® was meaningless without my instructor's feedback?

Appendix G

Criterion® for Research-Only Purposes Questionnaire

(ETS) **Criterion**

Criterion® for Research-Only Purposes

Thank you for your interest in using Criterion for research purposes. In order to consider your request, kindly answer the questions listed below and return the completed questionnaire to CriterionSupport@ets.org. After receiving your completed form, it will be forwarded to our ETS Research team for review. We will contact you if we need additional information or have questions. Researchers are typically requested to prepare a full, written project proposal for ETS review in order to support their request.

Please note ETS may charge a nominal fee for this service depending on the extent of the request. For example, the fees could cover a Criterion online training session, product and research support, and the number of subscriptions or e-rater submissions needed for the study.

Date of Request: **November 29, 2018**

	ETS QUESTION	RESEARCHER'S RESPONSE
1.	Name of institution	Hebron University
2.	Primary contact	Zeiadee khalil
3.	Email address	zeiadeekhalil@gmail.com
4.	Phone number	+970-595-182019
5.	Mailing address	n/a
6.	SKYPE address	zeiadee_khalil
7.	Countries in which study will be conducted	Occupied Palestinian Territories
8.	Names of institutions of higher education or schools where study will be conducted	Hebron University
9.	Number of anticipated instructors	1-2 instructors
10.	Number of anticipated students/users	10-15 students
11.	Grade level of students (K-12, Higher Education, English Language Learners)	undergraduate EFL learners
13.	Research focus (i.e. Automated scoring, automated feedback, English language learners)	Automated Scoring and Feedback
14.	Primary student usage scenario: Classroom setting, virtual classroom, writing lab, etc.)	virtual writing classroom
15.	Duration of study	4-5 months
16.	Research questions	see attached document
17.	Methodology	see attached document
18.	Names of Advisor/Dissertation Committee Members/Collaborators/Co-authors	1. Dr. Riyad Zahida
18.	How did you learn about Criterion? (Current user, conference attendee, web search, etc.)	web search
19.	Will you be utilizing the holistic score or trait feedback or both in your study?	both

Date Request sent to Research (ETS): **November 29, 2018** Name of Researcher: **Zeiadee khalil**

Please contact CriterionSupport@ets.org if you have any questions.

Appendix H

Criterion® Non-Commercial Research Software License Agreement

Criterion NON-COMMERCIAL RESEARCH SOFTWARE LICENSE AGREEMENT

This Software License Agreement ("Agreement") accompanies ETS's proprietary Criterion Online Writing Evaluation service, a web-based instructional tool that evaluates students' essay writing skills , ("Licensed Software"), and related explanatory materials ("User Documentation") (collectively, the "Licensed Product"). Please read this Agreement carefully. If you accept, complete and sign this Agreement, you may access the Licensed Software and use in accordance with the terms and conditions hereunder and those contained in the Criterion Subscriber Agreement; if you do not agree to any of the terms or conditions of this Agreement or the Criterion Subscriber Agreement, you are not permitted to use the Licensed Product.

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   f) Governing Law. This Agreement shall be construed and interpreted and its performance shall be governed by the federal laws of the United States and the laws of the State of New Jersey, U.S.A, without regard to conflicts of law

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BY SIGNING BELOW, YOU HAVE READ, UNDERSTAND AND AGREE TO BE LEGALLY BOUND BY THE TERMS AND CONDITIONS OF THIS SOFTWARE LICENSE AGREEMENT.

BY: _____

PRINT NAME: ZEIADEE KHALIL

ADDRESS: Al-Mahsiry Building Apartment 8, Kholafa' Al-Rashideen Mosque St., Bethlehem, West Bank

TELEPHONE: +970-595-182019

DATE: November 29, 2018

Appendix I

Supporting Document

Request of ETS Criterion for Research Purposes

To Whom It May Concern:

My name is Zeiadee Khalil and I am a currently an MA student at Hebron University, West Bank. I am enrolled in the third semester at the university and plan to write my thesis on "The Impact of Utilizing Automated Essay Scoring Software on Developing Palestinian Undergraduate Students' Writing Competencies". Before I embark on thesis writing, I would like to request your permission to use your product, Criterion®, for academic research purposes and for the submission of a thesis as a partial fulfillment of the requirements for the degree of M.A. in Applied Linguistics and the Teaching of English at Hebron University. The research questions, hypotheses, and methodology of my research are listed below:

Research Questions:

The main research questions for the study are as follows:

(1) Are there any statistical differences in writing performance between and within groups of participants due to the type of feedback they received?

(2) Is there a relationship between participant level and performance in the post-test?

(3) What is the effect of utilizing Criterion® on developing English major students' writing competencies at Hebron University?

(4) Are there any differences in student attitudes before and after being exposed to automated scoring and feedback?

(5) Do the results of the study suggest that manual feedback can be replaced with automated feedback generated by artificially intelligent machine learning technologies?

Research Hypotheses:

The following hypotheses will be addressed in the study:

H1: The statistical differences in the writing performance of students who received automated feedback supported by manual feedback is more significant in comparison to those who obtained written feedback and oral feedback.

H2: There is a positive correlation between participant level and their performance in the post-test; in other words, as the level of participants increases, their performance increases accordingly.

H3: The utilization of Criterion® assists students in developing their writing competencies through repeated practice.

H4: Students reflect positive attitudes towards using Criterion® and being exposed to a new form of feedback.

H5: Manually-generated scores and feedback cannot be replaced with automated feedback supplied by Criterion® since the software was designed to provide supplemental feedback to guide students as they practice writing.

Methodology:

Prior to conducting this study, **ethical approvals** from both Hebron University's English Department as well as Educational Testing Service (ETS) will be obtained. Once my request for conducting research will be approved, my supervisor and I will decide on the number of participants in accordance with the subscription fees, if any, and the number of students taking writing courses at Hebron University next semester. A **cover sheet** explaining the aim of the study, highlighting voluntary participation, and assuring the confidentiality of students' work and results will be attached to both the pre-test and post-test that will be administered during the study.

Two tests (pre and post) will be developed and employed by the researcher. In both tests, the subjects will be given 40 minutes to write an expository essay of five paragraphs. Each test will present two topics which aim at eliciting opinions and experiences from the participants

in relation to their status as English major students who will be taking writing courses in the Spring semester of the academic year 2018-219. The **pre-test** will explore if there are any significant differences in the students' writing skills prior to receiving any form of feedback on their essays. On the other hand, the **post-test** will check for any statistical differences in writing performance between and within groups of participants due to the type of feedback they received (written, oral, or automated plus manual).

Two questionnaires (pre and post) will be designed and distributed to the participants who will be receiving automated essay scoring and feedback for the purpose of eliciting their attitudes towards the effect of Criterion® in developing their writing skills. The **pre-questionnaire** will be distributed to the participants at the beginning of the Spring semester to elicit their attitudes towards the writing skill before being exposed to automated essay scoring and feedback generated by ETS Criterion®. Whereas, the **post-questionnaire** will be distributed at the end of the Spring semester for the purpose of eliciting the attitudes of the participants towards the writing skill after being exposed to automated essay scoring and feedback alongside supportive manual feedback on their written productions.

Last but not least, a **semi-structured interview** will be conducted with the participants, who used Criterion, as a follow up procedure to expand on their responses to the statements in the aforementioned post-questionnaire.

After noticing a gap in literature relevant to automated essay scoring and feedback in the Palestinian context, I aspire to conduct a research that will introduce the services offered by ETS Criterion® to Palestinian universities in hopes that such product can help university teachers overcome the challenges associated with the essay scoring and feedback writing process and assist students in developing their writing performances and achieve higher. I hope that your organization will take my request to use Criterion® for research purposes into consideration.

Respectfully Yours,

Zeiadee Khalil

Appendix J

Hebron University 121718 Acceptance Form

ETS *Listening. Learning. Leading.*

Welcome to the Criterion Online Writing Evaluation Service! We are pleased to provide you with access to our instructional tool. This document should be used as a reference as you demo the Criterion service.

We have created both an instructor and student trial account for your use. Your account hierarchy starts with a view as instructor, and drills down to the student, or class level. Please go to www.criterion.ets.org, and proceed to the "Returning User," box on the left to sign in. The user information for each role at the Trial class is listed below:

Username: zeiadeekhalil@gmail.com
Password: zeikha$01

Once you have signed in, note there is a dropdown menu in the top right corner of the page. This is where the Instructor accounts can toggle between Instructor and Student Views.

An assignment has been created for you; however please feel free to create your own additional classes and assignments.

Please reference these two Quick Access Guides as you navigate the Instructor and Student Roles:

Instructor Quick   Student Quick
Access Guide.pdf   Access Guide.pdf

We also have two Brainshark videos that will be helpful to you.

Criterion Brainshark   Criterion Brainshark
Instructions- Instruct   Instructions- Student

Appendix K

Instructor Quick Access Guide

ⓔ Criterion

http://criterion.ets.org

Instructor Quick Access Guide

1.0 REGISTERING AS A NEW USER

1) Click *Create User Account.*

2) Enter the *Access Code* you were provided.

3) Enter the *Title* by which you prefer to be addressed.

4) Enter your *Last Name, First Name* and optional *Middle Initial.*

5) Enter and confirm your *Email Address.*

6) Create and enter a *User Name.* (Your email address will work well for this purpose.).

7) Create and confirm a *Password.* (8 characters minimum containing 3 of these 4 elements: upper case letter, lower case letter, number other than 0, symbol.)

UN: _____

PW: _____

8) Select or create a *Security Question.*

9) Enter a *Security Question Answer.*

10) Click Submit.

11) You will return to the Criterion home screen. Log in as a returning user using the user name and password you just created.

2.0 ADDING A CLASS

1) From the Instructor Home Page click the Add icon on the task bar.

2) Select your *School* from the drop down Level menu.

3) Enter a unique *Class Name.*

4) Select the class *Grade Level.*

5) Choose the *Writer's Handbook* which best meets the needs of the entire class.

6) Check a *Dictionary* or accept both American and British as the defaults.

7) Set the optional Class End Date.

8) Verify your *Time Zone* and change it if necessary.

9) Enter the *Courtesy Name* that you would like students to see.

10) Click SAVE.

3.0 CREATING ASSIGNMENTS

1) Click on the name of a class to open it.

2) Click on the *Assignments* tab.

3) Click the *Add* icon.

4) Choose *No* for the *Administrator Assignment* option.

5) Choose an *Assignment Type* from the drop down menu: Topics Library, CCSS (Common Core State Standard), Scored Instructor Topic, or Text Editor.

6) Select the *Level* against which the essays for this assignment should be scored.

7) Choose a *Mode* from the drop down menu: All Modes, Descriptive, Narrative, Expository or Persuasive. (You may see additional options depending upon Level chosen above.)

8) Select a *Prompt* by title from the drop down menu. Click the View Topic Library button for the full text of listed prompts.

9) Change the default *Assignment Name* if you choose. You may accept the default for assignments from the Topics Library and CCSS, but should rename Scored Instructor Topics and Text Editor assignments.

10) Add up to 7 *Reference Links* with display names for the assignment.

11) Selecting a *Planning Option:* Allow all plans, No plan, Assign a Plan.

12) Select *Assignment Options:* Spell check, thesaurus, save draft. Students are limited by *Criterion* to 10 attempts on a given assignment.

13) Select *Peer Review* options:

    a. Choose Yes or No to enable *Peer Review.*

    b. If Yes, Select peer feedback options: Peer Group Dialogue and/or Peer Group Comments.

    c. Create peer review groups by selecting students. Double click a student name or select the name and click the right arrow to include the student in the group. Enter a group name for each completed peer group.

    d. Edit or delete a group previously established by clicking Update or Delete.

14) Select Trait Feedback Results and Writer's Sample.

15) Select *Results Criterion* will display to students.

16) Choose *Yes* and set dates or *No* for *Deadline.*

17) Click SAVE.

4.0 ADDING STUDENTS TO A CLASS

1) From the Instructor Home Page, click on the *Class Name*.

2) Click on the Roster tab.

3) Click *Get Access Code*. A student email with the code will be generated. You must provide this code to students for self-registration.

4) To add previously registered students to your class, click the Connect icon. Type in a student name and click the Search button. Check the student name and click Connect.

5) To add multiple registered students, leave the search box blank. Check the boxes in front of the names of students to be enrolled in the class. Click Connect to import them all at once.

6) To add students unregistered students to your roster, click Add Student.

5.0 WORKING WITH STUDENT PORTFOLIOS

1) From the Instructor Home Page, select a class by clicking on its name.

2) Click the Activity tab to display current student efforts.

3) From the *Student* drop down select "All students" or a student by name.

4) From the *Assignment* drop down, select "All Assignments," the "Most Recent" assignment, or a particular assignment by name.

5) From the *Activity Period* drop down, choose a time span., and Click GO.

6) From the *Activity* column, select a draft or attempt for review. Click the link to open the assignment.

7) Click on the *Response* tab to view *Criterion* feedback in each category. Numbers in parentheses indicate how many comments Criterion has offered in each trait category. Clicking on a category name will provide a drop down of possible errors. The number of errors for each feedback type is indicated in parentheses. Click any feedback category showing errors to see the error highlighted in the student essay.

8) To add comments, click the Comments button on the left. Highlight any word to select it for comment. Enter a comment in the box that appears on the right, or check the Comments Library box to select a a comment you have previously stored. Click Enter after each comment and click Save to exit and save all comments in an essay.

9) Click the dialogue button on the right to enter discussion or to review discussion history. All dialogue among the instructor, student and peer reviewers will be visible here. Enter dialogue and click Send.

10) Click the Results tab. The student Criterion score and trait level scores for Word Choice; Grammar, Usage and Mechanics; and Organization and Development will be displayed.

11) Click the Feedback Analysis link for an overview of specific trait category errors in the essay. Click the bars on the chart to view specific Trait Feedback Errors and the corresponding Writer's Handbook text.

6.0 VIEWING REPORTS

1) Open a class by clicking on the class name from the Instructor home screen.

2) Click on the Reports tab.

3) Select a *Report Name* from the dropdown:

   a) Score Analysis Report—shows identifying information, question, response, and instructor comments and dialogue

   b) Expanded Performance Detail Report—shows identifying information question, response and footnotes identifying all Criterion identified errors within each trait level type.

   c) Expanded Performance Summary Reports—shows identifying information, question, criterion score, total quantity of errors in trait feedback analysis, and a clean copy of the response.

   d) Submission by Student—shows all submissions made by the student to date

   e) Criterion Score by student—shows student Criterion scores for designated assignments, number of attempts, average score, percent of attempts, and advisories.

   f) Trait Errors—shows how many errors and what types from the diagnostic trait feedback, the number of attempts with errors, and the percent of attempts with errors.

   g) Access Codes—shows current instructor and student access codes for the class.

   h) Student Access Information Report—shows district, school, class, student, username, and last login date.

   i) Portfolio Report—shows assignment name; attempt date; Criterion score; number of errors in grammar, usage, mechanics and style; trait levels for word choice, conventions, fluency and organization; and full text of essay

3) Options for customizing your report will be listed under *Report Options*. Check the options you desire.

4) Click the *View Report* button, and your report will be displayed.

5) To print your report, click the *Print* hyperlink on the right.

6) Click the Export button for any report to send it to a spreadsheet.

7) Additional information about reports can be obtained by clicking the help button.

Appendix L

Student Quick Access Guide

ⓔ Criterion   http://criterion.ets.org

Student Quick Access Guide

1.0 REGISTERING AS A STUDENT

1) Click *Create Account.*

2) Enter the *Access Code* you were provided.

3) Enter your *Last Name, First Name* and optional *Middle Initial.*

4) Enter and confirm your optional *Email Address.*

5) Create and enter a *User Name.* Your user name must be unique to your school.

6) Create and confirm a *Password.* (6 characters minimum, do not use zero)

7) Select or create a *Security Question.*

8) Enter a *Security Question Answer.*

9) Click Submit.

10) A Success message will appear.

11) Record your user name and password below.

UN: _____

PW: _____

2.0 LOGGING IN AS A STUDENT

1) Go to the *Criterion* Welcome screen at http:// criterion.ets.org.

2) Enter the user user name and password you created or that was supplied by your instructor in the Returning User box and click Sign In.

3) This will take you to your Home Page where you can view notices from your instructor, or enter your class to begin work on an assignment.

3.0 ADDING YOURSELF TO AN ADDITIONAL CLASS

1) It is important that you only register once in Criterion. You may access multiple classes using the same login information.

2) From your Home Page, click the *Enter Access Code* link near the top center of your screen.

3) Enter the access code provided by your instructor.

4) Click Connect.

5) The additional class will appear as a choice in the blue box at the bottom of your Home Page.

4.0 BEGINNING YOUR RESPONSE

1) Click on the name of your class from the class menu at the bottom of your home screen.

2) Click on the *Assignments* tab.

- Click the assignment name to view the full text of the prompt.
- Click the *View Plan* link to begin creating a plan.
- Click the *Start Response* link to begin a response.

3) Begin work on your draft by creating a plan. Your teacher may have specified a particular plan for the assignment. If so, this will be your only option. If no plan was selected by your teacher, you may choose from the eight graphic organizers provided in *Criterion.* The Outline plan will open by default. To choose a different plan, click on a plan type from the menu in the blue bar. Enter your ideas directly into the plan. When your plan is complete, click the *Save* button. View your completed plan. Click the *Start Response* button at the bottom right of your screen to begin your response.

4) Read the instructions your instructor has provided. Remember to single space the content of each paragraph, press the enter key twice between paragraphs, and save your work often. The Tab key does not function in Criterion, so all text will be left aligned. You may either type directly into the response field below the Formatting Bar, or if you have composed your draft in a word processing program, you may copy and paste it into the Response field. Be sure to save frequently as you continue work on your draft using the Save button on the lower left of your screen. The Saved message on the lower left will show the last date and time your essay was saved.

5) Click the Plan tab at any time to toggle between the plan and the response screens. You may copy and paste from your plan directly into the response screen.

6) When your response is complete, be sure to run Spell Check, then click the *Submit* button in the lower right corner of your screen.

5.0 VIEWING CRITERION FEEDBACK

1) When you have submitted your essay, Criterion will provide you with specific feedback on your work. First view your Criterion Score and the trait indicators listed below it in the blue box on your screen. Click the *Score Guide* button on the right to view the full rubric.

2) View Your Trait Level Scores in the green boxes for additional feedback on Word Choice; Grammar, Usage and Mechanics; and Organization, Development and Style.

3) Click the *Feedback Analysis* link above the blue box to view your Feedback Analysis Chart. This chart will display the number of possible errors *Criterion* has identified in your attempt.

4) Click the Response tab to see specific feedback from each category. The number in parentheses indicates how many possible errors Criterion has detected. Click on each of the categories to view specific feedback in your essay by clicking on any feedback trait followed by a number. A dropdown menu will further identify the specific type of error. Click on any error type, and the corresponding error in your essay will be highlighted. Roll your cursor over the error to view the *Criterion* note on this error.

5) For more information on any roll over note, click the *Writer's Handbook* button on the blue feedback bar.

6) Once you have reviewed all of *the Criterion* feedback, click the *Revise* button on the lower left of your screen to begin your revision.

6.0 REVISING YOUR RESPONSE

1) Your instructor and peer review group can also provide feedback on your essay in the form of comments and dialogue. Before they take a look, you may wish to make some revisions based on the *Criterion* feedback.

2) Click the *Revise* on the lower left corner of your screen. You will now have a split screen view.

3) View a copy of your response with Criterion feedback on the left side of your screen and enter corrections on the right side.

4) When you have corrected all identified errors in your essay, take time to review your essay for its content. Ask yourself these questions:

- Have I engaged my reader with a strong attention getter?

- Did I provide some background information in my introduction?

- Does my thesis statement clearly define the purpose of my essay?

- Have I provided a number of main ideas to support my thesis?

- Is each main idea backed by supporting facts, details and reasons to further develop it?

- Do I have a strong conclusion that restates my thesis, summarizes my main points and leaves the reader thinking?

5) Remember to Save frequently using the button on the lower left of your screen as you make improvements to your response.

6) When you are satisfied with the revisions to your response, click the *Submit* button on the lower right of your screen.

7.0 VIEWING TEACHER AND PEER FEEDBACK

1) Your instructor may have enabled peer review for your response and may have included comments and dialogue to help you revise your essay. If feedback has been provided for your essay, you will see a notice on your Home Page.

2) To view specific comments from your instructor and peers, click the Comments button on the left side of your screen. A dropdown in the center will allow you to choose the comments to view. Roll your cursor over a highlighted comment to see the note provided by your reviewer.

3) Click on the Dialogue button on the right of your screen. Here your instructor and peer reviewers may enter into a dialogue with you concerning your essay. You may also respond to these comments. The dialogue becomes part of the history of the draft, and you may also view it when revising your essay.

8.0 UTILIZING HELP AND RESOURCES

In addition to the *Writer's Handbook* which provides additional feedback and samples or common errors, two additional features are available to support your work in *Criterion*.

1) *Help*—Click the Help link in the top right corner of your Home Page for answers to the question "How do I do this?" and for descriptions of all the actions and reports in the Criterion service.

2) *Resources*—Click the Resources link in the top right corner of your Home page for a copy of this Student Quick Access Guide, and a Student's Beginning Guide to Criterion.

3) Use the Quick Links on your homepage to access the Brain Shark tutorials. Enter "student" for the user name and PW.

9.0 ARCHIVING YOUR PORTFOLIO

1) From the Response tab, click the Export button at the top right of your screen. You will be prompted to select the items you would like to include. Once selections are made, click the Export button. Your data will be copied into a spreadsheet that you can save on your hard drive or on a flash drive. Your data will still remain in the *Criterion* system as well.

Appendix M

Criterion® Rating Rubric

Print

Score 6: A typical essay at this level:

- effectively addresses the writing task
- is well organized and well developed
- uses clearly appropriate details to support a thesis or illustrate ideas
- displays consistent facility in the use of language
- demonstrates syntactic variety and appropriate word choice, though it may have occasional errors

Score 5: A typical essay at this level:

- may address some parts of the task more effectively than others
- is generally well-organized and well-developed
- uses details to support a thesis or illustrate idea
- displays facility in the use of language
- demonstrates some syntactic variety and range of vocabulary, though it will probably have occasional errors

Score 4: A typical essay at this level:

- addresses the writing topic adequately but may slight parts of the task
- is adequately organized and developed
- uses some details to support a thesis or illustrate an idea
- demonstrates adequate but possibly inconsistent facility with syntax and usage
- may contain some errors that occasionally obscure meaning

Score 3: A typical essay at this level may reveal one or more or the following weaknesses:

- inadequate organization or development
- inappropriate or insufficient details to support or illustrate generalizations
- a noticeably inappropriate choice of words or word forms
- an accumulation of errors in sentence structure and/or usage

Score 2: A typical essay at this level is flawed by one or more of the following weaknesses:

- serious disorganization or underdevelopment
- little or no detail, or irrelevant specifics
- serious and frequent errors in sentence structure and usage
- serious problems with focus

Score 1: A typical essay at this level:

- may be incoherent
- may be undeveloped
- may contain severe or persistent writing errors

Appendix N

Sign In Procedure (The Criterion® User Manual)

Criterion® User Manual

2.2 Sign In

1. In the **Criterion®** Log in page, go to the **Returning User** section (shown below).

2. In the appropriate fields, enter the User Name and the Password you created.

3. Click on the **<Sign In>** button.

4. Your **Criterion® Home** page will appear.

Appendix O

Comments Section

Appendix P

Criterion® Writing Assignments

Appendix Q

Writing Diagnostics Categories and Sub-categories (The Criterion® User Manual)

What Your Students See And Do In Criterion

Writing diagnostics are provided in the following areas:

Categories	Sub-Categories
Grammar	Fragments
	Garbled sentences
	Subject-verb agreement
	Verb-form errors
	Pronoun errors
	Possessive errors
	Wrong or missing words
Usage	Article errors
	Confused words
	Wrong form of word
	Faulty comparison
	Nonstandard verb or word form
Mechanics	Spelling
	Missing capitalization of proper nouns
	Missing initial capital letter in a sentence
	Missing question mark
	Missing final punctuation
	Missing apostrophe
	Missing comma
	Missing hyphen
	Fused words
	Compound words
	Duplication words
Style	Repetition of words
	Inappropriate words or phrases
	Sentences with passive voice
	Long sentences
	Short sentences
	Sentences beginning with coordinating conjunctions
Organization and Development	Introductory Material
	Thesis statement
	Main ideas
	Supporting ideas
	Conclusion
	Transitional words and phrases

Appendix R

Essay without Feedback 1

Should letter grading systems be replaced with pass/fail grading systems? Support your point of view with specific reasons and/or examples from your own experience, observations, or reading.

Comments   **Dialogue**

Organization & Development   **Grammar**   **Usage**   **Mechanics**   **Style**   **Writer's Handbook**

Organization & Development

Grades are something which every student wants to get it. It is difficult to obtain high degrees and to boost awareness.

There are three ways to acquire elevated grades; to give attention to what the teacher said, to attend classes and to read many books.

First, to give attention to what the teacher said is necessary. For example,take notes and revise what you write. Share in the activities that talk about the school or college subject. Help scholar in everything they need. Go to the instructional trip with your classmate.

In addition to give attention to the teachers said to attend classes. Come to the lecture on time and be confident . Also Watch video about university topic when you are at home. Then Bring information from many sources to wider your knowledge. Recognition meaning in education's life and social community.

Third,to read many books is the most substantial thing. This is in rich your meanings and increase knowing. Furthermore,strengthens your character and Mentality. Else makes you knowing new traditions and customs.

Finally, to have high grades is a nice step . I hope to secure

Appendix S

Essay without Feedback 2

Appendix T

Spelling Errors

PLAN	**RESPONSE**	RESULTS		**Export**

Grades

Some people argue that having grades in our school systems puts too much emphasis on competition among students and not enough emphasis on learning for its own sake. Others argue that without a precise grading system, students would not work as hard to excel in their studies because they would not have a standard against which to measure their performance.

Should letter grading systems be replaced with pass/fail grading systems? Support your point of view with specific reasons and/or examples from your own experience, observations, or reading.

Comments		**Dialogue**

Organization & Development	**Grammar (5)**	**Usage (1)**	**Mechanics (18)**	**Style (38)**	**Writer's Handbook**

Spelling (11)

Grades are an effective means of motivating students to do their best work. If there no grades why students would like to work hard? So good grades are important for three things. good grades can lead to scolarships. Lead to fun oppurtunities. and boost confidence.

Firstly, Good grades can lead to scolarships. College and scolarship committess will review your students transcripts. Better grades,higher test scores, and involvement in a varity of activities can help your students get more money for college.

Second, Good grades leads to fun opportunities. Students who get grades are given oppurtunities at high schools through programs like the National Honor Society. Talk about various events that your student may be able to participate in if she gets good grades. sometimes, hearing from someone other than can help reinforce your message.

PLAN   RESPONSE   RESULTS   Export

Successful Students

Successful students do well in school for many different reasons. Identify one or two important personal characteristics that help a student succeed in school. Use specific examples to show why you think these characteristics are important for student success.

Comments   Dialogue

Organization & Development   Grammar   Usage   Mechanics (5)   Style (9)   Writer's Handbook

Spelling (5)

Success has several meanings and types.It reflects determination to reach the goal.Successful students mean students who work hard to do well in school and to have wide opportunity stadying and working in large institutions. Many factors help sucessful students to achieve their aims:being active at school,giving yourself rewards,and managing time .

Firstly,to be a successful student in your school you have to be active in your class. Such as, participating in what teacher says or ask about that helps in installing the information.Also, write everything down because it makes it easier to remember and understand the information .In addition, it is better to ask if you do not understand one of the topics or have questions about it because it helps to get the topic from all sides.

Secondly, students have to give themselves reward to keep them motivated.For example, you might decide after 45 minutes of work,you will reward yourself with five-minute YouTube video. Furthermore,it is a way to have some rest after a long-hour working .It is to have time to take breath and relax which make your brain work effectively. Additionally,giving yourself reward makes you concentrate on what you do and have better results.

Finally, managing time is the most important charaterstics that help students succeed in school. Time managment help students organize their work.Students who are not organized end up wasting precious time looking for items and notes while who are organized taking full advantage of their time at work .Also,they regulate their life ,when they have to eat,how many cups of water must drink,and hours that they have to sleep which reflects on their act.

In the result,if the student is active in his class and he can understand the ideas that presented,he rewards himself to encourges him to work effectively,and manage his time correctly leads him to the success and excellence he seeks.

Appendix U

Subject-Verb Agreement Errors

Plan: Review saved plans, edit or save a new plan.
Response:Review trait feedback highlights to review rollover feedback messages. Revise and edit this attempt if more attempts are available. Save as a draft or submit as a new attempt.
Results: Review available results, for score and feedback analysis for the submitted attempt. Export this assignment attempt and its contents before class expires.

A+ Professor   Attempt 1

| PLAN | RESPONSE | RESULTS | | Export |

A+ Professor

What makes a professor great? Prominence in his or her field? A hot new book? Good student reviews every semester? What standards should be used to assess the quality of college faculty members? Support your position with reasons and examples from your own experience, observations, or reading.

Comments   Dialogue

Organization & Development   Grammar (13)   Usage (6)   Mechanics (3)   Style   Writer's Handbook

Subject-Verb Agreement (12)

A professor is a faculty member of highest academic rank at an institution of higher education. Professor are different from person to another. For some people, they might be an ordinary teacher that gives just some information like robot. For others, they consider him an inspiration to them. Furthermore,he considers the last mentor before we enter the rest of our live. I consider my professor an inspiration to me for several reasons:he give us a chance to think creatively,treat everyone equally,and treat students as a friend not just a student.
To begin with,my professor give me a chance to think creatively. I had only a few teachers in my life that truly give me an opportunity to think outside the box,which help me to improve my personality. For example, my teacher give me an assignment to talk about American society which makes me read more and know a lot about this people and their culture that develop my English as well. Furthermore,a great professor make you enjoy the content that you weren't like . For example,I feel boring when someone tell me about history but my great teacher make this history like a story which makes me enjoy it.
In addition to give students a chance to think creatively, my wonderful teacher treat everyone equally. For example,he treat me and my classmates in the same way without preferring anyone.when a professor makes you feel as you are incompetent is a horrible feeling. Furthermore, great educator give all students chance to participate and speak .In addition,a great professor should not have a priority among students for any reasons.
A long with give students a chance to think creatively and treat everyone equally,a great professor treat his students as a friend not just a students. A beautiful thing that your teacher talk to you as a friend because it is alter your attitude in the class,give you confidence,and create a better learning environment. For example,my teacher tell us a story when he was in Britain and give us advice which makes us increase our knowledge. Moreover,teacher can be serious and fun and the same time. He can be serious when he explain information and at other times he can be fun and kind with us .
In conclusion, a great professor is very important person in our lives that he may change our lives. Therefore, I think that students and teachers are play important roles to build on another in different ways. Be a good student,and you will help build great professor

Grades

Some people argue that having grades in our school systems puts too much emphasis on competition among students and not enough emphasis on learning for its own sake. Others argue that without a precise grading system, students would not work as hard to excel in their studies because they would not have a standard against which to measure their performance.
Should letter grading systems be replaced with pass/fail grading systems? Support your point of view with specific reasons and/or examples from your own experience, observations, or reading.

Comments   **Dialogue**

Organization & Development   **Grammar (5)**   **Usage (1)**   **Mechanics (18)**   **Style (38)**   **Writer's Handbook**

Subject-Verb Agreement (2)

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Appendix V

Missing or Extra Article Errors

Organization & Development   **Grammar (2)**   **Usage (3)**   **Mechanics (3)**   **Style**

Writer's Handbook

Missing or Extra Article (3)

Successful students do well in school for many different reasons. I will talk about important personal characteristics that help you as a student to succeed in school .first,willingness to learn, be punctual , and don't compare yourself to anyone else.

Firstly, a willingness to learn. I believe it's important for students to have a willingness to learn. They can then take information that is being taught and apply it in ways that are meaningful to them, as well as expand upon the information to make it fit into their interests and surroundings. A love of learning is extremely valuable as a student and I believe willingness comes first. Learning in itself is far more important than a score on a test of information that might never be seen again. If the information was truly absorbed and can be applied, this is a true testament to learning.

Secondly, you should be punctuality in order to be successful. Ability to take control over your own time and schedule is very important. Successful students need to be able to plan their weeks and semesters ,have enough time for researching and working on assessments. On the other hand , It's equally as important to give yourself time for hobbies, fun , and take time for yourself to see friends and relax after a long day studying. According to problems with time management, I usually start using paper day planner and write on it all my duties and the time required for each one .This helps me a lot to arrange my thoughts and organize my time.

Thirdly, The most important factor to be success is never comparing yourself with anyone else. Successful students succeed on their own terms. They don't care about others because they know that in the end, all what matters is their own success. Whenever you worried about what other people are doing, then you will be disappointed in yourself . Therefor, learn to put the others aside and to focus on doing the best that you can do.

A+ Professor   Attempt 1

PLAN	RESPONSE	RESULTS

Export

A+ Professor

What makes a professor great? Prominence in his or her field? A hot new book? Good student reviews every semester? What standards should be used to assess the quality of college faculty members? Support your position with reasons and examples from your own experience, observations, or reading.

Comments

Dialogue

Organization & Development   Grammar (13)   Usage (6)   Mechanics (3)   Style

Writer's Handbook

Missing or Extra Article (3)

A professor is a faculty member of highest academic rank at an institution of higher education. Professor are different from person to another. For some people, they might be an ordinary teacher that gives just some information like robot. For others, they consider him an inspiration to them. Furthermore,he considers the last mentor before we enter the rest of our live. I consider my professor an inspiration to me for several reasons:he give us a chance to think creatively,treat everyone equally,and treat students as a friend not just a student.

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Appendix W

Missing Initial Capital Letter in a Sentence Errors

PLAN	RESPONSE	RESULTS		Export

Grades

Some people argue that having grades in our school systems puts too much emphasis on competition among students and not enough emphasis on learning for its own sake. Others argue that without a precise grading system, students would not work as hard to excel in their studies because they would not have a standard against which to measure their performance.
Should letter grading systems be replaced with pass/fail grading systems? Support your point of view with specific reasons and/or examples from your own experience, observations, or reading.

Comments   **Dialogue**

Organization & Development   Grammar (5)   Usage (1)   Mechanics (18)   Style (38)   **Writer's Handbook**

Missing Initial Capital Letter in a Sentence (7)

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Appendix X

Unspaced Words Selection

Grades   Attempt # 8

Plan	Response	Results		Export

Grades

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Should letter grading systems be replaced with pass/fail grading systems? Support your point of view with specific reasons and/or examples from your own experience, observations, or reading.

Comments   Library   Reviewer: Zeiadee Khalil ▾   **Dialogue**

Letter- Grading Systems should not be replaced

A grading system in education is a system that is used to assess the educational performance of a child which is entirely based upon points alone. Letter grading systems should not be replaced for three reasons:. Identification of weaknesses and strengths, student motivation and understandable at a glance.

To begin with, a grading system helps learners to identify their weaknesses and strengths. Firstly, they know precisely which subjects are their weak spots.Learner can easily decide where to toggle their focal point on. Secondly, in a grading system where the alphabets are the scales, a grade of "c" or a grade of "d"is known to speak a lot, so when the total grades arrive those students can easily get to know their forte. Thirdly, teachers grade children's skills of writing, reading and listening which means that learners can easily know about their lacking abilities through the assigned grades and work on them to improve overall performance

View Comment

Comment:

remove period after colon

Commented By:
Zeiadee Khalil

Date:
4/12/2019 9:33:31 AM