

Online Quizzes as a Formative Assessment Tool to Improve Students' Grammar Learning within a Blended Learning Context

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Abstract

Recent trends in foreign language assessment have integrated online modes of evaluation: formative and summative. The former has been used to support the students' self-directed learning as well as to aid instructors reflect on their teaching practices. This study aims at investigating the effectiveness of utilizing online quizzes as a formative assessment tool to promote sophomores' grammar learning. In an attempt to achieve the research aim, an experiment has been conducted in which the experimental group received online grammar quizzes whereas the students of the control group did not. Eventually, both groups received the same grammar in-class post-test. After comparing the two groups' post-test results, the experimental group indicated a difference in the scores obtained in comparison to that of the control group. Such results show that employing online formative assessment in a form of quizzes has improved the students' grammar learning in a blended learning context.

Key words: Online formative assessment; grammar learning; blended learning.

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Résumé

Les tendances récentes en matière d'évaluation des langues étrangères ont intégré des modes d'évaluation en ligne, qu'ils soient formatifs ou sommatifs. Le premier a été utilisé pour soutenir l'apprentissage autonome des étudiants ainsi que pour aider les enseignants à réfléchir sur leurs pratiques d'enseignement. Cette étude vise à étudier l'efficacité de l'utilisation de quiz en ligne pour promouvoir l'apprentissage de la grammaire des étudiants de deuxième année. Dans cette étude une expérience a été menée dans laquelle le groupe expérimental a reçu des quiz de grammaire en ligne tandis que les étudiants du groupe témoin n'ont reçu aucun. Finalement, les groupes ont reçu le même post-test. Après avoir comparé les résultats post-test des deux groupes, le groupe expérimental a indiqué une différence dans les notes obtenues par rapport à celui du groupe témoin. Ces résultats montrent que l'utilisation de l'évaluation formative en ligne sous forme de quiz a amélioré l'apprentissage de la grammaire des étudiants dans un contexte d'apprentissage mixte.

Mots clés: Évaluation formative en ligne; apprentissage de la grammaire; apprentissage mixte.

ملخص

لقد دمجت الاتجاهات الحديثة في تقييم اللغة الأجنبية أساليب التقييم عبر الإنترنت التكوينية وكذا الختامية. يستخدم التقييم التكويني من أجل دعم التعلم الذاتي للطلاب وكذلك لمساعدة الأساتذة على إعادة التفكير في ممارساتهم التعليمية. تهدف هذه الدراسة إلى التحقق من فعالية استخدام الاختبارات الموجزة عبر الإنترنت كأداة تقييم تكوينية لتعزيز تعلم قواعد اللغة لطلاب السنة الثانية. في محاولة لتحقيق هدف البحث، تم إجراء تجربة حيث تلقت المجموعة التجريبية اختبارات موجزة لقواعد اللغة عبر الإنترنت في حين لم يتلق طلاب المجموعة الضابطة أي اختبارات قصيرة عبر الإنترنت. في النهاية، تلقت كلتا المجموعتين نفس القواعد النحوية في الاختبار اللاحق في الفصل. بعد مقارنة نتائج الاختبار اللاحق للمجموعتين، أشارت المجموعة التجريبية إلى وجود اختلاف في الدرجات التي تم الحصول عليها مقارنة بنتائج المجموعة الضابطة. تظهر مثل هذه النتائج أن استخدام التقييم التكويني عبر الإنترنت في شكل اختبارات قصيرة قد حسن من تعلم قواعد اللغة لدى الطلاب في سياق التعلم المدمج.

الكلمات المفتاحية: التقييم التكويني عبر الإنترنت، تعلم القواعد، التعلم المدمج.

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I- Introduction

Recent changes in the educational sector due to the pandemic of Covid-19 have led instructors and students around the globe to cope with a new mode of teaching and learning where in-person and online education take place simultaneously. This change has not only shaped the way teachers deliver courses but also how they assess their students. Having a thorough picture of students' progress in hybrid learning can provide the teacher with input about their understanding and whether an intervention is required. However, it seems that the importance of online evaluation to assess students' progression in learning the grammar module is neglected to some extent. Thus, students at the Department of English, Constantine Mentouri Brothers University, Algeria, encounter several difficulties in grammar learning, particularly in an online context. It is, then, necessary to give more attention to implementing different digital tools that would help teachers bridge this gap and enhance their instructional practices in blended environments. Implementing online formative assessment tools in grammar instruction keeps learners constantly in touch with their studies and so promote students' grammar learning. This study aims to investigate the effectiveness of using online quizzes through Google Forms to promote second-year students' grammar learning. In this regard a hypothesis is advanced as follows: if Grammar teachers use online quizzes as an online formative assessment tool, students' grammar learning is likely to improve. Hence, this paper attempts to address the following question: Do online formative assessments, more specifically online grammar quizzes, contribute to improve students' understanding of grammar? To answer this question and to check the validity of the hypothesis, a quantitative research design was conducted through experimentation which includes an intervention and a post-test.

I.1. Formative Assessment

The literature offers various definitions of formative assessment. Broadly speaking, formative assessment has been associated with multiple methods instructors adopt to gather evidence on learners' academic progress. Popham (2008) defined formative assessment as "a planned process in which teachers or students use assessment-based evidence to adjust what they are currently doing" (p.6). This implies that formative assessment is employed not to only to monitor students' learning but also to change the teachers' future practices to improve learning and teaching. In the same vein, Boston (2002) explained that when instructors know how students are progressing and where they are having difficulty, they may use this information to make the necessary instructional modifications. Hence, the aim of this form of evaluation is not to grade students works and performances but it is a data collection method of how effective teaching practices are and how well students respond to them. The importance of formative assessment in learning lies in helping learners building their skills. It enlightens learners of what they require to consider so as to ameliorate their performances to their end objective (Clarke, 2001). Additionally, in their study on secondary school students, Mehmood, Hussain, Khalid, and Azam (2012) concluded that formative assessment has a great influence on pupils' academic progress.

I.1.1. Online Formative Assessment

In online education, learners do not only learn in which content is transmitted at distance, they are also being assessed at a certain point of the course. Online assessment can be formative or summative. The former is a mode of evaluation where the teacher integrates technology to collect data which, hopefully, enhances learning and teaching experiences. Baleni (2015) defined online formative assessment as blending conventional formative evaluation with technological aspects in an online context. For Gikandi, Morrow, and Davis (2011) it is a pedagogical mode of evaluation backed by technological materials in an online setting which is employed for

conducting in-process evaluation as well as looking for future improvement in teaching to meet the various learning needs.

Additionally, students may take advantage of the many benefits of being assessed in an online environment. First, Velan, Jones, Mcneil, and Kumar (2008) stated that students can gain immediate feedback, which results in a constant feeling of support on their part. Second, Marquis (2021) demonstrated that online formative assessments allow learners to relate learning to their own experiences and views. Third, adopting an online formative assessment can assist teachers as well; they can use technology to evaluate students' performance, track their progress, and tailor their instruction which hopefully matches with the students learning requirements (Spector et al., 2016 as cited in Mahapatra, 2021). Technological advancements and the increasing use of online formative assessment helped to bridge the gap between instructors and students to improve the quality of learning (Ogange, Agak, Okelo, et al., 2018). Online assessment is time-saving and minimizes teachers' workload especially when learners are provided with immediate feedback. In this case, instructors will be more aided to gather the needed information on how well their learners have grasped information.

I.1.2. Online Formative Assessment and Immediate Feedback

Online feedback is information provided by an educator, peer, or another individual via an online medium such as the written word, audio file, video, pre-programmed automatic response, or live web-based conferencing (Leibold & Schwarz, 2015). In paper and pencil assessments, it may take hours for the teacher to evaluate the learners' performances and provide them with the required feedback to move to the next stage. However, in online assessment, feedback is provided automatically in many assessment forms. Hence, students can be given immediate feedback right after they complete an online task/quiz. About this, Spector, Ifenthaler, Samspon, Yang, Mukama, Warusavitarana, Dona, Eichhorn, Fluck, Huang, Bridges, Lu, Ren, Gui, Deneen, San Diego and Gibson (2016) explained that modern technology simplified the process of how learners attain teachers' feedback whereby multiple intelligent tutoring systems could provide feedback based on a learner's performance on a particular task, or based on their answers.

Furthermore, Leibold and Schwarz (2015) studied the best practices for delivering online feedback to learners. Feedback should be timely and part of the period communicated to the students before moving to the next lesson. Also, Bransford et al. recommended the use of this form of feedback for students to provide them with immediate information about how well they performed and give them a chance to revise by repeating the same task, which is known as "timely feedback" and "repeating the test" (as cited in Wang, 2007). Therefore, automated feedback promotes the students' development of reflection and self-assessment (Pishchukhina & Allen, 2012).

In addition, formative feedback should be constructive. It should be closely connected to the student's learning goals and it should also involve both positive and negative feedback and suggestions for improvement, where the focus is on the work, not the learner (Hatzia Apostolou & Paraskakis, 2010). Besides, the teacher's tone should be rewarding and encouraging for learners to keep up the good work and strive for development and improvement. Feedback has to be designed in a way that aids learners discover their strengths and weaknesses and reflect on areas that require more work to improve their achievements (Leibold & Schwarz, 2015). Moreover, Hatzia Apostolou and Paraskakis (2010), Leibold and Schwarz (2015) stated that feedback should provide specific clear information to learners rather than vague ones with sufficient details, where instructors have to signal what students did right and where they could do better.

Since feedback is provided online, it means direct interaction between the students and the teacher is less likely to take place. Thus, feedback should be clear and informative enough to the learners. Information provided can assist learners to know where they are standing, should they reflect on the previous content or move the next level of learning? Instant feedback, then, facilitates the process of assessment for teachers as well as students. Hence, employing the various technological developments provides learners with immediate, personalized, and timely feedback in an online

environment.

I.1.3. Online Formative Assessment Tools

To use the data gathered from this mode of evaluation effectively, teachers must consider how to use the different technological tools. Accordingly, teachers must possess some sort of computer knowledge expertise to guide their learners. In effect, teachers are required to be acquainted with utilizing such technology so that they ensure convenient use of different tasks, quizzes or activities that match with the course objectives.

McLaughlin and Yan (2017) explained that online formative assessment practices offer an opportunity for learners to interact or record themselves and create online material that can be checked and assessed by an instructor or a computer using Web 2.0 tools and social networking. This implies that learners can be offered a variety of ways to be assessed that would match with their different learning styles. Likewise, as part of dynamic and intelligent tutoring systems, teachers can personalize and advance language evaluation using novel tasks to evaluate learners' competences and to collect data by means of artificial intelligence (Voss, 2018). Benson (2003) provided eleven online assessment practices for educators without access to management systems: 1) items with multiple choices, true/false, and matching 2) fill-in-the-blank, short-answer, demonstrate your work, and visual description 3) Online meetings, 4) Concept mapping, 5) Portfolio evaluation, 6) Writing 7) Work experience Problem-Solving Simulations, 9) Projects for individuals and groups 10) Informal student feedback; (11) Peer and self-evaluation. Besides, many innovative tools and software have been launched to assist instructors in using formative assessment throughout education to improve learning and assessment: Clickers, Socrative, Kahoot, Plickers, and Recap are a few examples of tools (Remmi & Hashim, 2021). The following are the most common ones:

I.1.3.1. Socrative

Socrative is one of the most common tools for formative assessment. Cerqueiro and Harrison (2019) defined it as a software application and quiz-based formative assessment tool with numerous characteristics which efficiently aid the teaching and learning processes. He explained that it allows instructors to construct novel polls, exams, and quizzes in which students can answer questions using their actual identities or anonymously, depending on the teacher's preference; the questions can be both multiple-choice and open-ended; and the instructor can provide instant feedback. Accordingly, Socrative can be very convenient for language learning allowing students to maximize their language skills through diverse processes. In addition, Coca and Slisko (2013) stated that teachers, in this online tool, may review learners' initial responses in real-time and structure groups to encourage students' cooperative learning. He added that learners enjoy discussions and learn to defend their solutions and viewpoints, which raises motivation as well as improves the quality of learning. Alharbi, Ameera, and Meccawy (2020) stated that Saudi EFL students' early experiences with Socrative were overwhelmingly positive; students were encouraged and felt supported in language evaluation. They used positive terminology since it incorporates features not seen in traditional paper-based tests, such as direct feedback, pictorial hints, answer explanation, and score display. What is distinct in Socrative is that, in addition to simultaneous feedback, it gives teachers a possibility to tailor assessment forms in a way that suit both teachers and students.

I.1.3.2. Kahoot!

Kahoot is a digital learning platform that includes motivation and the reward system. According to Kapsalis, Galani, and Tzafea (2020), Kahoot is a free game-based learning platform (<https://kahoot.com/>) that has completely and positively changed K-12 and higher education and that matches with the requirements of this current generation. Students may use Kahoot to revise freshly acquired instructional content while receiving rich and rapid feedback, which boosts learners' motivation; the

efficiency of grammatical rules or semantic recall, improves acquisition of new structures, and maybe most notably, improves positive relationships with the teaching subject (Michos, 2017). It is perhaps safe to assume that gamifying classes can be very engaging to learners where fun is an inevitable ingredient in Kahoot's games/activities. Additionally, the efficiency of Kahoot as stated by Kapsalis, Galani, and Tzafea (2020) is that it can be used alongside traditional methods to enhance grammatical competence in adult foreign language learning. Hence, this online learning platform can be very advantageous to university learners helping them grasp more grammar structures.

I.1.3.3. Google Forms

Google Forms is a free online software generated by Google that works with Docs, Sheets, and Slides which facilitates collecting data. Recently, educators have been utilizing Google forms to assess students' knowledge to discover their strengths and weaknesses at the beginning of class. Google forms is an advantageous tool of assessment for it helps students set learning goals and collect data to enhance the teaching and the learning processes (Chaiyo & Nokham, 2017). Since it is free and easy to operate, Google Forms can be used exceedingly in education for in-process evaluation. Alharbi, Alhebshi, and Meccawy (2021) pointed out that Google Forms is a good tool that improves students' knowledge and self-efficacy. EFL teachers like Google Forms' specific characteristics such as automated feedback, complete record of students' progress, and types of questions that allow for the addition of videos, audio, and photos, which are vital in EFL assessment. Also, the user can choose short or long texts, multiple-choice or selection boxes. This online software is used in this study as an online assessment tool for it is free and more accessible to both teachers and students in comparison to Socrative and Kahoot!

I.1.4. The Role of Online Quizzes in EFL Classrooms

In an online environment, quizzes are perceived as an effective approach in successful learning. McKeown and Maclean (2013) noticed a correlation between online quizzes and final exam scores explaining that learners who took more quizzes have a better probability of passing their final examinations. Additionally, online quizzes are a significant ingredient of the educational process for, as a formative assessment tool, they enhance students' comprehension of the course (Cohen & Sasson, 2016). Similarly, Lastari, Mustafa, and NurAini (2020) pointed out that quizzes promote active engagement, where students have an opportunity to learn in a fun environment. In the same vein, Zuhriyah and Pratolo (2020) believed that online quizzes are very convenient for a university-level English class since they are fun, engaging and could maintain students' concentration while completing the task at hand. They added that using quizzes raised their confidence because their profiles might remain anonymous. Additionally, the mechanism of this type of quizzes allow students to reconsider and correct the flaws in the answers they chose. In online language learning, quizzes seem to be very suitable as a mode of assessment during the process of learning grammar. In effect, quizzes can take various types that can be appropriate to assess learners' grammar knowledge.

I.2. Grammar and Online Formative Assessment

I.2.1. Grammar and Online/blended Learning

The concept of grammar as a discipline being controlled by rules is a narrow view; this is primarily based on the belief that grammar is a set of organized structures which might inform us approximately about the connection between phrases (Hashemi & Daneshfar, 2018). However, with the emergence of the communicative approaches, the objectives of language teaching/learning shifted from an emphasis on forms to a focus on meaning and communicative skills (Rafajloviová, 2010). The larger concept of grammar which combines characteristics of semantics, pragmatics, and syntax is called "communicative grammar," (Leech, 1980). Grammar does not only involve the

study of grammatical structures, but also their meaning and uses (Shams, 2019). As a result, grammar is thought to cover not just form but also meaning and context of use; and discourse rules tell us how to string those sentences together (Larsen-Freeman, 2001).

For Nassaji and Fotos (2011), grammar is pivotal to any language learning; on this account, language does not exist without grammar. Likewise, Takahashi (2005) asserted that without possessing a solid knowledge of how grammar functions in second or foreign language, the student has nothing more than a stock of familiar vocabularies sufficient for basic greetings but will fall short when faced with a more complex linguistic endeavor.

Instructors who design online courses and traditional courses have an opportunity to develop assessments to monitor students' progress and to achieve learning objectives. In a blended learning context, assessment is a mix of human input and technology to facilitate language evaluation and scoring because the process is faster than only human resources were used (Sejdiu, 2014). These assessments are also time saving in terms of conducting and grading tests, making the assessment process more efficient. Simonson et al., (2000) stated that assessment content can be used in any instructional situation, whether delivered over the Internet or in person. However, some assessment forms are crucial in distance education. **Therefore, in an online context, grammar can be assessed by means of alternative assessment tool, which could aid continuous assessment activities and self-evaluation tools relieve the learner of time constraints (as cited in Dikli, 2003).**

1.2.2. Pedagogical Studies on Online Grammar Quizzes

Several studies have been conducted to examine the effectiveness of using grammar quizzes in an online context to enhance students' competence and comprehension of grammar. For example, Al-Jarf (2004, as cited in Hong, 2008) conducted an experiment to investigate the efficacy of extra online materials to upgrade learners' grammar knowledge/learning. The study comprises an experimental group of EFL university learners from Saudi Arabia who have been engaged in an online course which allowed them getting access to grammar lessons and multiple online grammar quizzes on different points which were included in their grammar textbook. Both the experimental group and the control group have received the same in-person grammar instruction. The difference between them was that only the experimental group had extra online materials whereas the control group was taught grammar using the textbook only. The two groups received the same pre-test and post-test to mark any differences of achievement between them. The findings of the experiment showed a significant difference between the two groups. The experimental group scored higher and outperformed the control group in the post test. Al-Jafri (2004) stated that this significant difference can be due to the additional online grammar components the experimental group had access to. Face-to-face grammar instruction of this group was backed with various explanations and online grammar practices (Quizzes) which aided students to eventually improve their grammar proficiency (as cited in Hong 2008).

Another research was conducted by Bury (2017) in which he compared two assessment tools namely Kahoot! and Quizziz to traditional methods of grammar assessment. The results of this comparison showed that students notably enhanced their grammar knowledge. Bury (2017) pointed out that students, in this study, held positive attitudes towards Kahoot! and Quizziz suggesting that teachers should occasionally integrate online assessment tools instead of entirely relying on in-person grammar assessment.

Moreover, Rajaretnem (2004) carried out a survey with 30 EFL low achievers from the Faculty of Mechanical Engineering (Malaysia) who have been enrolled in a Preparatory Programme to evaluate the four skills including grammar. Students had to independently use handouts which include explanations, guided practice, exercises and key answers. To support grammar learning, students had access a computer laboratory where they spent two to three hours per week to do online grammar quizzes. At the end

of the semester, the students were interviewed on the use of online grammar quizzes. The findings showed that the majority of the students preferred online quizzes over paper quizzes. Further, all of them indicated that their general knowledge of grammar has increased due to the practice they had on online grammar quizzes.

Likewise, Hong's (2008) study on postsecondary students was an attempt to probe their views towards online grammar quizzes. A structured pre-interview took place before the experimental group has received the treatment which is getting access to a set of grammar quizzes links for a whole week the aim of which is to help them with their grammar test on Wh-questions. After the students had the institutional grammar test, a structured post interview was carried out to investigate their responses towards online grammar quizzes and compare them with those of the pre-interview. The data have uncovered that students views have changed in terms of usefulness, easiness and interest. The majority of students have a conviction that online grammar quizzes helped them to be motivated and to get efficient grammar learning.

II– Methods and Materials

II.1.The Participants

The students who participated in this study are two second-year groups (N =54) at Mentouri Brothers University of Constantine, Algeria. One group is the experimental group (N=27) and the other is the control group (N=27). It is worth noting that both groups have been delivered the same grammar content. All the participants had the same face-to-face grammar instruction throughout the academic year.

II.2.Research Design Strategy

The quasi-experimental design is used in this study. It is a type of quantitative research that is used to investigate the effectiveness of online grammar quizzes as a formative assessment tool in improving students' grammar learning. As stated by Hox and Boeije (2005) this design allows for bidirectional causality conclusions. Therefore, the researcher is required to create a group comparison to determine causality through an intervention by manipulating the variables in a controlled setting. The researchers opted for a quasi-experimental design that uses experimental and control groups with a post-test only.

II.3.The Experiment

An experiment was conducted to determine the impact of online formative assessment on grammar learning. The research experiment comprises two phases. The first phase is the intervention phase, which involves a treatment; and the second phase is the post-intervention phase, which includes a post-test.

II.3.1.The Treatment

The researchers launched an intervention that lasted a whole semester. Initially, the treatment was supposed to last five weeks. However, due to uncontrolled circumstances, the intervention lasted three weeks. A weekly online quiz was developed on Google Forms and was available anytime and anywhere to the experimental group only (the students of the controlled group have not received such weekly online quizzes). The quizzes acted as a focal point and foundation for each week after every in-class lesson, providing the basis for revising concepts in the lecture. The three quizzes were distributed evenly throughout the semester through the Google Classroom platform with the help of the grammar teacher. Each week, after the lesson presented in the class, the experimental group would obtain an online grammar quiz to support their learning, aid them to discover their strengths and weaknesses, and improve their performance. It is worth noting that these quizzes allow the students to do them as many times as they liked and needed, with an unlimited number of attempts. After students have completed the quiz, the researcher obtains the statistics of each student's answers. This report contains the partial credit assigned to each answer, the number of students that chose each option, and the overall mark obtained. In addition, learners were also given their scores after each completed attempt, with automated

feedback concerning their performance.

The quizzes have been selected from different grammar books. The three quizzes have been developed and divided into sections. Each quiz contains twenty questions covering different points in the lesson, and they were designed so that any student who had attended the in-class session and engaged with the teacher on the core concepts is able to complete the quiz.

- **Quiz One:** Nouns and Articles

The first quiz is composed of five sections. The first section involves a multiple-choice task, where learners have a blank and four or five choices of a word or phrase that completes the sentences correctly. The investigators had chosen this particular type of question in all of their quizzes because they are easy to grade and cover plenty of grammatical points. This quiz was taken from Longman English Grammar Practice for Intermediate Students: Self Study Edition with Key by Alexander (1990). In the second section, the students have three sentences, and they are asked to identify the correct and incorrect ones. The third section is a task that implies completing sentences with three utterances with an accurate article. This type of practice enables learners to distinguish between countable and uncountable nouns. The fourth section is another right-and-wrong type of practice, where students should identify the correct and incorrect ones. Hence, they are provided with two sentences, and the response is in a short answer. The rest of these tasks are taken from Grammar Scan Diagnostic tests for practical English Usage by Swan and Baker (2008). The last one was devoted to written production, where students were required to compose three sentences: in the first sentence, learners should apply the (a-articles), the second (zero articles and the), and in the last sentence, include the three articles (a-an-the). For each sentence question, the researchers allocated one point as a score.

- **Quiz Two:** Gerunds and Infinitives

The second quiz is composed of five sections as well. The first section consists of word-changing activities, where ten sentences are given to students to choose the correct answer from multiple options. Each sentence has a word between brackets that they need to fit in by changing the form of the utterance into a gerund or an infinitive. This exercise allows students to test their knowledge of different word forms and how they are used in sentences. The second section includes a transformation of items practice in which the students had to complete three-sentences, where they have the first few words of another sentence. Learners here should change the original sentence without altering its meaning by including either gerunds or infinitives as it is appropriate. The third section comprises a sentence combining task, an activity where students need to combine two sentences into a new sentence. It includes three sentences, and the reply should be in the form of a short answer. The fourth section encompasses another transformative task, where students are required to link the first part provided between brackets with the sentence given to them and decide when to add an infinitive or a gerund, which they are required to answer in a short response. The last section is a production part, where students have to write a sentence implementing a gerund or an infinitive. In each sentence, the researchers allocated one point as a score. All of the above mentioned tasks are taken from The Longman English Grammar Practice for Intermediate Students: Self Study Edition with Key by Alexander (1990).

- **Quiz Three:** Prepositions and Prepositional Phrase

The last quiz on prepositions and prepositional phrases includes four sections. Each covers a particular point of the lesson. All activities in this quiz are a multiple-choice task where students are supposed to fill in the gaps with one of the set of options

already provided to them, which are drawn from the in class lesson. The first section deals with the different types of prepositions from movement, place, and time. This task was taken from Alexander (1990). The second task deals with prepositions and prepositional phrases and is another multiple-choice practice. The students should supply the appropriate prepositional phrase and phrasal verb for five sentences. This practice can be found in Focus on advanced English C.A.E. Grammar practice revised and updated by Walton (1999). In the third section, there are six sentences in which they need to choose suitable phrasal verbs. This activity was taken from English Grammar for the Utterly Confused by Rozakis (2003). The last part was devoted to a written production, where they had to compose one sentence by applying phrasal verbs. In each sentence, the researchers allocated one point as a score.

II.3.2. Description of the Post-test

At the end of the treatment, a post-test was used. It intends to identify the discrepancies in students' performance by comparing the scores obtained from the post-test of both the experimental and control groups to see whether there is any statistically significant difference between them. The post-test comprises a written production, where students spend one hour composing a paragraph about their experience in an online learning environment.

Students' writing was evaluated using a scoring rubric to assess the quality of their end product in the post-test. To score students' writing for the post-test in both the experimental and control groups, the teachers have used a scoring rubric that aligns with the content of the lectures students have received in class, which are nouns and articles, prepositions, and prepositional phrases, and gerunds and infinitives. Therefore, the scoring of students' writings was a holistic rubric based on the grammar aspects presented in the lessons and on the content presented in the tasks of the quizzes. Hence, the test is graded based on a single criterion: how far they correctly apply the grammatical rules presented to them in the class.

III- Results and Discussion

The post-test marks of both groups, the experimental and control group, were analyzed using a statistical test known as the t-test.

III.1 T-test

To investigate the effectiveness of online quizzes in improving students' grammar learning, a t-test or student t-test is employed to compare the means of both groups, the experimental and the control group post-test scores, to determine whether the treatment affected the experimental group or whether the two groups' marks are different from one another.

In this study, the experiment is related to the independent sample t-test because the researcher compares the means of two independent groups: one that receives treatment and the other group that does not receive online quizzes. It is also one-tailed because the prediction is directional, which means we expect the mean of the experimental group that received the treatment will be higher than that of the control group that did not receive any treatment.

III.2. Displaying Data

Table 1. The Experimental and the Control Groups' Post-Test Scores

N	Experimental Group		Control Group	
	X1	X1 ²	X2	X2 ²
1	8	64	4	16
2	16.5	272.25	7	49
3	16	256	10	100
4	8	64	2.5	6.25
5	8.5	72.25	4	16
6	9	81	7.5	56.25
7	15	225	13	169
8	6.5	42.25	2	4
9	10	100	2	4
10	8	64	8	64
11	5.5	30.25	2.5	6.25
12	8	64	9	81
13	6	36	2.5	6.25
14	18	324	9	81
15	7.5	56.25	11	121
16	8.5	72.25	7.5	56.25
17	6	36	13	169
18	7	49	9	81
19	11	121	2.5	6.25
20	7.5	56.25	8.5	72.25
21	7	49	2.5	6.25
22	5	25	8.5	72.25
23	10	100	2.5	6.25
24	10.5	110.25	11	121
25	6	36	13.5	182.25
26	3	9	9	81
27	5	25	15	225
Total	$\sum X_1 = 237$ $\bar{X}_1 = 8.78$	$\sum X_1^2 = 2440$	$\sum X_2 = 196.5$ $\bar{X}_2 = 7.28$	$\sum X_2^2 = 1858.75$

III.3. The Computation

The calculation procedure of the t-test for the independent groups was put forth by Miller (2005) as follows:

- Computing the means (\bar{X}) of the two groups:

$$\left. \begin{array}{l} \bar{X}_1 = \frac{\sum X_1}{N_1} \\ \bar{X}_1 = \frac{237}{27} \\ \bar{X}_1 = 8.78 \end{array} \right| \begin{array}{l} \bar{X}_2 = \frac{\sum X_2}{N_2} \\ \bar{X}_2 = \frac{196.5}{27} \\ \bar{X}_2 = 7.28 \end{array}$$

- Calculating the variance s_1^2 of the experimental group and the variance s_2^2 of the control group:

$$\begin{array}{l}
 S_1^2 = \frac{\sum X_1^2}{N_1} - \bar{X}_1^2 \\
 S_1^2 = \frac{2440}{27} - 8.78^2 \\
 S_1^2 = 13.29
 \end{array}
 \quad \left| \quad
 \begin{array}{l}
 S_2^2 = \frac{\sum X_2^2}{N_2} - \bar{X}_2^2 \\
 S_2^2 = \frac{1858.75}{27} - 7.28^2 \\
 S_1^2 = 15.85
 \end{array}$$

- Computing 't'

$$\begin{aligned}
 t_{N1 + N2 - 2} &= \frac{(\bar{x}_1 - \bar{x}_2)\sqrt{(N_1 + N_2 - 2)N_1N_2}}{\sqrt{(N_1S_1^2 + N_2S_2^2)(N_1 + N_2)}} \\
 &= \frac{(8.78 - 7.28)\sqrt{(27 + 27 - 2)27 \times 27}}{\sqrt{(27 \times 13.29 + 27 \times 15.85)(27 + 27)}} \\
 &= \frac{1.5 \sqrt{52 \times 729}}{\sqrt{(358.83 + 427.95) \times 54}} \\
 &= \frac{1.5 \times 194.7}{\sqrt{786.78 \times 54}} \\
 &= \frac{292.05}{206.13} \\
 &= 1.41
 \end{aligned}$$

- Calculating the degree of freedom df

$$df = N_1 + N_2 - 2$$

$$df = 27 + 27 - 2$$

$$df = 54 - 2$$

$$df = 52$$

- Finding the critical value of t in the t-table

To calculate the desired value of 't' the researcher opted for Miller's (2005) statistical t-table for independent samples. Our obtained degree of freedom is 52, but the t-table does not specify 52. Hence, we utilized a lower degree of freedom (40) for 0.05. With a level of significance of 0.05 and a degree of freedom of 52, the "t" value is 2.021. Consequently, according to Miller (2005), since our study is one-tailed, the t value found in the table has to be divided by 2. As a result, the obtained "t" value was divided by 2, and we found 1.0105. The following table presents the T-table.

Table 2. T-table

<i>df</i>	<i>Level of significance</i>			<i>df</i>	<i>Level of significance</i>		
	-10	-05	-02		-10	-05	-02
12	1.782	2.179	2.681	29	1.699	2.045	2.462
13	1.771	2.160	2.650	30	1.697	2.042	2.457
14	1.761	2.145	2.624				
15	1.753	2.131	2.602	40	1.684	2.021	2.423
				60	1.671	2.000	2.390
16	1.746	2.120	2.583	120	1.658	1.980	2.358
17	1.740	2.110	2.567		1.645	1.960	2.326

III.4. Discussion of the Results

An intervention took place over three weeks to mark any difference of achievement between the experimental group and the control group and to investigate whether online grammar quizzes have any possible effect on the students' grammar learning. After the required computations (means, variances, t and df) were carried out, the calculated value of t of the experiment is found to be higher than the critical value of t ($1.41 > 1.0105$). That is, the post-test results imply that the experimental group who received the online quizzes performed better in the grammar test than the control group who did not. Thus, the findings established a cause-effect relationship which leads us to conclude that there is a difference between students who were quizzed over class material at least once a week performing better on tests when compared to students who did not take any online grammar quizzes.

IV- Conclusion

The results obtained from the post-test prove that the students of the experimental group who received the treatment outperformed the control group students. In effect, the findings of this study have answered the research question of whether online formative assessment, more specifically online grammar quizzes, can improve sophomores' grammar learning and so confirmed the research hypothesis. It has been concluded, then, that online quizzes are an effective teaching tool that can enhance learners' understanding of grammar. The participants showed a better understanding of Nouns and Articles, Gerunds and Infinitives, Prepositions and Prepositional Phrases after they had both in-class instruction and online formative assessment. This leads to assume that when instructors use online quizzes to assess students' grammar learning in a blended learning environment about concepts covered in the lessons, it will improve their performance. In this research, in-class learning was supported by online activities or quizzes that are engaging, purposeful and that provide immediate feedback. Students would feel more immersed in the learning process for it allows them to instantly know their weaknesses and have more quiz trials after reflecting on their knowledge which would eventually aid them to upgrade their language learning. Hence, it is recommended to raise teachers' awareness of the effective use of online formative assessment with the available resources in grammar teaching by training and encouraging them to employ such modes of assessment in our educational contexts.

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