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Online Learning, Offline Performance: Evidence from Moroccan High School Students during the COVID-19 Pandemic

Hassane Benlaghrissi
Sultan Moulay Slimane University, Benni Mellal, Morocco
benlaghrissi@gmail.com

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Abstract

The outbreak of COVID-19 has made a substantial positive impact in educational settings, urging teachers to use innovative online ways of teaching and making numerous online platforms, including Microsoft Teams, Google Meet, Google Classroom, video communication applications, and many other tools accessible for students. However, the online learning setting has spawned a variety of challenges for both learners and teachers, ranging from technical problems to poor training. As a matter of fact, learners, educators, and practitioners have different attitudes toward the effectiveness of online learning. Considering this, this study investigates the impact of implementing online learning on students' grammar performance in Morocco. It does so by assessing the control and experimental groups' performance during five-week experimentation. The study population was 11th-grade secondary school students in Tazizaoute High School, El Kbab, Khenifra, Benni-Mellal-Khenifra Region. The participants were randomly and equally assigned to the control group (N=30), taught through face-to-face learning, and the experimental group (N=30), taught using online learning via Microsoft Teams. To collect quantitative data, grammar pre- and post-tests were employed to measure the grammar performance in both groups before and after the treatment. Both descriptive and inferential statistics (Independent T-Test) using SPSS-26 were used to analyse the data. The findings revealed a statistically significant difference between the two groups favouring the control group.

1. INTRODUCTION

Implementing online learning as an alternative to face-to-face learning has a long history of varying classroom instruction practices using technology. Due to COVID-19, many countries have imposed lockdown measures to diminish social contact and thus encompass the spread of the Novel Coronavirus (Brodeur et al., 2020; Eyles et al., 2020). As a result, many schools worldwide were forced to close down and start online learning. This mode of instruction has made a huge positive impact on the learning-teaching process by urging teachers

to use more innovative online ways of teaching and making countless online platforms, including Microsoft Teams, Google Meet, Google Classroom, video communication applications, and many other tools accessible for students. On the other hand, educators and practitioners have witnessed various challenges for learners and teachers, ranging from technical problems to poor training. In the midst of all of this, students and educators had different attitudes toward the effectiveness of online learning. While some agree that online learning could be a more effective learning experience for learners, others admitted that face-to-face learning could not, in any way, be replaced by any other form of learning (Razak, Yassin, & Maasum, 2020).

Online learning is a formal approach to learning wherein the learning-teaching process occurs in a physically different location between the learner and the instructor through digital technology (Mehrotra et al., 2001; Moore et al., 2011). Paulsen (2002) distinguished between conventional and online learning by four features. First, learners are separated from their teachers. Besides, online learning is influenced by an educational institution. In addition, the purpose of using a computer network is to distribute online learning content. Lastly, a computer network provides two modes of communication between the student and the teacher. Consequently, the sponsorship of an educational establishment and the detachment of the teacher and the student using different software with access to the internet are characteristics of online courses. (Ascough, 2002; Basilaia & Kvavadze, 2020; Nguyen, 2015).

Mehrotra et al. (2001) provide critical practices to enhance the learning-teaching process in online education. This starts with encouraging students to contact their teachers via e-mail and respond promptly to the messages they receive. Second, increase student collaboration and reciprocity. Moreover, teachers ought to implement strategies for active learning, such as engagement activities encouraging active learning and implementing projects. Teachers should also comment positively, emphasise work completion, convey high expectations, and accept students' different skills and learning styles. Therefore, these practices promote collaborative online learning and foster learners' skills and information communication technology skills.

To sum up, the utilisation of modern technological tools in the learning-teaching process has become a must since technology has evaded all parts of our lives. Undoubtedly, implementing ICTs in educational settings would promote quality education. However, online learning is among the most effective ways to implement ICT in education. Accordingly, this study investigates the impact of online learning via Microsoft Teams on secondary school students' grammar performance in Morocco by assessing the control and experimental groups' performance before and after the treatment during five-week experimentation.

2. LITERATURE REVIEW

Much research has been conducted on online learning since the Corona Virus outbreak. However, other academics had examined the topic before the pandemic and reached significant conclusions. What has been published thus far suggests diverse findings based on the study's setting, target populations, and the available resources for this mode of instruction.

In 2010 Işik et al. examined Turkish college students' attitudes toward web-based distance learning experience at Gazi University. A five-Likert questionnaire was distributed to the participants (N=64). The findings showed general positive attitudes towards distance learning. Most participants (64.1%) reported that WBDL was more effective than face-to-face learning. In addition, 78.1% felt comfortable while having this experience. Furthermore, the t-test findings revealed that females had higher favourable attitudes toward web-based online classes than males. Females expressed themselves more freely and were more comfortable. The authors concluded that distance learning could provide a more effective and comfortable learning environment, especially for postgraduate female students.

Celik and Uzunboylu (2015) conducted a similar study in the same country to evaluate secondary school students' changes in attitudes towards online education in 2010 and 2014. The study participants were 92 students in the 2010 group and 99 in the second group. Though the authors found a 3-hour increase in internet time usage, they did not detect any differences in attitudes towards distance learning. The authors ascribed these findings to students' nature of internet use. While much time is spent on social networking sites and entertainment activities, less time is given to educational purposes. In addition, the researchers found no variations in perceptions between male and female students.

Ullah et al. (2017) investigated Pakistani undergraduate students' attitudes toward online learning in another exploratory study. The authors investigated if there was a link between students' usability of online learning and their interest in computers using a closed questionnaire with a 5-point Likert Scale, the effectiveness of computers, and the easiness of use of computers. The results demonstrated no significant relationship between online learning and the three beforementioned elements and thus had no positive attitudes toward online learning. The authors concluded that while the government invests much money in electronic communication resources, students must become more familiar with online learning. They also reported that students still need help understanding and using online learning. As a result, the researchers offered several implications, including setting goals for e-learning programs, training students, and providing funds.

Hussain et al. (2020) utilised data from two Pakistani educational institutions to assess the efficiency of the online and face-to-face learning systems. Most of the respondents considered online learning to be an effective and modern way of learning during COVID-19. 63.9% of the participants admitted that online learning is an alternative to conventional learning, and 61.1% strongly agreed that online learning tools such as computers, mobile phones, the internet, social media, and social networks were effective aids of the teaching-learning process at home.

Clark et al. (2020) used administrative data on ninth graders from three middle schools in China to assess the effects of online learning on students' performance. During around seven weeks, the three schools used various instructional strategies. The authors found that students who were taught online achieved more progress in academic outcomes than those accessing face-to-face lessons. Furthermore, students who utilised computers instead of smartphones for virtual learning made substantially more remarkable progress.

Due to the COVID-19 pandemic in South Africa, Chisadza et al. (2020) looked into the characteristics influencing university students' success after switching from face-to-face to online instruction. The authors used students' replies to a questionnaire about the variation in the mean assessment grades between pre-lockdown and post-lockdown. The findings demonstrated a favourable correlation between students' performance and reliable mobile and wifi internet access. The researchers recommended enhancing digital infrastructure and lowering internet costs to lessen the COVID-19 pandemic's adverse effects on educational results.

Kumar et al. (2021) investigated university students' attitudes toward online classes during the lockdown in India. The questionnaire link was sent to all 228 participants via WhatsApp and e-mails. The results indicated that most of the participants, 51% had positive attitudes toward online classes. They also reported that this mode of instruction improves their learning and interest. Besides, 60% of the respondents admitted that online learning could not replace face-to-face learning, while 35% agreed.

In Morocco, far too little attention has been paid to online education. Benhima (2021) displayed University students' acceptance and attitudes toward distance education during COVID-19. The researcher used questionnaires and focus group discussions to determine students' used platforms during the pandemic and their attitudes towards distance learning. The findings showed that WhatsApp, dictionary apps, and Google were the most used platforms by students. Moreover, though some part-time students and those living far away from the

university preferred online learning, most participants had positive attitudes towards face-to-face learning than online learning.

El Aouri (2021) explored Moroccan university students' perceptions, feedback, and willingness for distance learning during COVID-19. By administering a survey questionnaire to 262 participants. A medium degree of agreement (M=2.85) was discovered based on the questionnaire's total mean score. Moreover, female students had a more favourable view of online classes than male students and a highly upbeat preparation for virtual classrooms.

In short, the literature review suggests diverse findings regarding the effectiveness of online learning compared to face-to-face learning. However, previous studies have focused more on investigating learners' attitudes toward online learning, and only a few studies have dealt with the issue by adopting an experimental design. In addition, there appears to be a scarcity of research in the Moroccan context, especially in secondary schools. Therefore, this empirical study seeks to obtain data that will help address some of these research gaps by examining the impact of online learning on students' grammar performance in Morocco by assessing the two groups' performance during five-week experimentation. In light of this, the following question was addressed:

Is there a significant difference between the control and the experimental groups in grammar scores after the treatment?

Accordingly, the following hypothesis was formulated:

H0: Participants taught using distance learning performed no better on the grammar tests than those in the control group.

H1: Participants taught using distance learning performed significantly better on the grammar tests than those in the control group.

3. METHOD

Pre- and post-tests were employed in this true experimental research. The experimental and control groups were assigned randomly, and the data were compared quantitatively. In this study, there were two variables—one independent and one dependent. The independent variable is the implementation of online learning in grammar courses (X1) for the experimental group and conventional grammar teaching for the control group. In contrast, the dependent variable is students' grammar performance (Y1).

3.1. Participants

Eleventh-grade EFL secondary school students from Tazizaoute High School in El Kbab, Directorate of Khenifra, Benni-Mellal-Khenifra Academy, Morocco, participated in this study. Sixty students comprised the study's sample, of which 30 were randomly allocated to the experimental group and 30 to the control group.

3.2.Data Collection and Analysis

As already stated, grammar pre- and post-tests were employed to collect data. The grammar post-test measured the participants' grammar performance in both groups aiming to consider the effect of implementing online learning on EFL learners' grammar performance. The researcher designed the grammar test based on students' textbooks and graded it out of 20.

3.2.1. Validity of the Instruments

Although the grammar test was based on students' textbooks, content validity (CV) was also used to ensure its validity. The grammar post-test was given to four field experts: two Moroccan English language supervisors and two experienced teachers. However, the judges confirmed the validity of the test with no modifications.

3.2.2. Reliability of the Instruments

To confirm the reliability of the post-test, test re-test reliability was examined. A sample of 20 students not participating in the study undertook the grammar test twice (two weeks between the initial and the second test-taking). As presented in table (1), the findings of Cronbach's Alpha suggested a value of 0.954, implying a significant positive correlation between the scores in the two tests. The results, therefore, reveal that the grammar post-test is reliable for the study.

Table 1: Test-retest Reliability of the Grammar Test

	Cronbach's Alpha Based on	
Cronbach's Alpha	Standardised Items	N of Items
,954	,956	2

3.3. Procedure

The study was carried out for five weeks, from April 25th to May 28th, 2021. Before being treated, the two groups were given the pre-test to assess their grammar performance before the treatment. Both groups took part in the study for five weeks. During that period, the control group was taught grammar lessons that included simple past, present perfect, and simple future via face-to-face learning. In contrast, the experimental group received online learning in the same lessons using Microsoft Teams on mobile phones, tablets, or PCs.

Following treatment, the two groups received the grammar post-test to evaluate the effect of online courses versus conventional learning.

4. FINDINGS AND DISCUSSION

SPSS-26 at a 0.05 significance level was used to analyse the data. However, the analysis began by comparing the two groups' grammar performance in the grammar pre-test to ensure the two groups were homogeneous. Before running an independent samples t-test, a normality test was first applied. The results are shown in Table (2).

Table 2: Normality Test of the Two Groups in the Pre-test

Groups	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Control	,108	30	,200*	,966	30	,436
Experimental	,148	30	,090	,958	30	,278

Table (2) shows that the p-value in the Kolmogorov-Smirnov test was .200* for the control group and .090 for the experimental group. In the Shapiro-Wilk test, the control group's p-value was .436, and the experimental group's p-value was .278. Thus, scores were normal in each group as the p-value was higher (p> .05) in the pre-test. Based on these results, an independent samples t-test was conducted to see if there were any variations in the grammar performance of the two groups prior to the intervention. Tables (3) and (4) present the findings:

Table 3: Descriptive Data before Treatment

Groups	N	Mean	Std. Deviation	Std. Error Mean
Control	30	12,73	4,152	,758
Experimental	30	11,80	4,382	,800

Table 4: Independent Samples T-test before Treatment

Levene's Test for Equality of Variances	t-test for Equality of Means

	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	,117	,733	,847	58	,401	,933	1,102	-1,273	3,139
Equal variances not assumed			,847	57,832	,401	,933	1,102	-1,273	3,140

The control group's mean value (N=30) is 12.73, with a standard deviation of 4.152, as seen in table (3). In comparison, the experimental group's (30) mean value is 11.80, with a standard deviation of 4.382. In order to confirm that the variances of the two groups were comparable, homogeneity of variance, a crucial assumption of the Independent T-test, was also examined. The p-value from table 4 is 0.733, which is more than 0.05. As a result, the data's variance was homogenous. A p-value of .401 above 0.05 is also shown in this table (T=.401; df=58; p>.05). This implies that there were no considerable differences in the two groups prior to the intervention grammar performance.

After five weeks of teaching grammar, a post-test was given to the two groups to assess the effect of online learning on students' grammar proficiency. Once more, a normality test was used before carrying out the independent samples T-test to compare the post-test results of the two groups, as shown in table (5).

Table 5: Normality Test of the Two Groups in the Post-test

Groups	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Control	,124	30	,200*	,945	30	,127
Experimental	,138	30	,148	,933	30	,059

As can be analysed from the above table, the p-value in the Kolmogorov-Smirnov test was .200* for the control group and .148 for the experimental group. In the Shapiro-Wilk test,

the control group's p-value was .127, and the experimental group's p-value was .059. Thus, scores were normally distributed in each group (p> .05) in the post-test. Based on all these findings, an independent-sample t-test was run to compare the two groups' grammar post-test scores to determine whether there were differences in the post-test scores. The results are illustrated in Tables (6) and (7).

Table 6: Descriptive Data on Post-test of the Two Groups

Groups	N	Mean	Std. Deviation	Std. Error Mean
Control	30	14,90	3,537	,646
Experimental	30	10,73	6,400	1,168

Table 7: Independent Samples T-test on Post-Test of the Two Groups

	Levene's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference	
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	17,393	,000	3,121	58	,003	4,167	1,335	1,494	6,839
Equal variances not assumed			3,121	45,199	,003	4,167	1,335	1,478	6,855

As indicated above, the table t-test results highlight a noticeable difference between the control group's mean score (M=14.90) and the experimental group's mean score (M=10.73). Moreover, the p-value (2-tailed) was .003, which was less than 0.05 (T=3,121; df=58; p>.05). Overall, these results indicate that face-to-face learning was more effective than online learning.

5. CONCLUSION AND IMPLICATIONS

The current study examines how online instruction affects grammar performance in Moroccan secondary school students. The findings based on the t-test (table 8) revealed that the control group, who were taught traditionally via face-to-face, performed significantly better than the experimental group, who were taught using online learning via Microsoft Teams. Thus, H0 is accepted, while H1 is rejected.

As already manifested in the literature review, some studies (Clark et al., 2020; Hussain et al., 2020; Işik et al., 2010; Kumar et al., 2021) reported promising outcomes regarding the implementation of distance courses, while others (Benhima, 2021; Celik & Uzunboylu, 2015; Ullah, 2017) came to the opposite conclusion, believing that face-to-face instruction was more successful than online instruction, and thus students reacted negatively to the introduction of online instruction. Consequently, it can be argued that this study fits the second category of research based on the results of the current investigation.

Insofar as this is the case, the researcher suggests the following implications. First, provide students with effective and practical tools to avoid technical problems related to the device rather than relying on their own devices. Second, before the implementation, instructors have to prepare students for the experience, especially students who have not already had an experience in online learning.

Moreover, training students to use different educational platforms is necessary to increase their familiarity with ICT tools and digital competency (Sheehy, 2012). Finally, training teachers professionally on how to use educational platforms is highly recommended. All of this, as a result, would allow learners to enjoy high-quality learning resources, primarily for free (Bachiri, 2022). Besides, well-implemented online learning would increase youth capacity development and employment opportunities (Anyanwu, 2013; Emediegwu, 2021). This would also enhance learners' autonomous learning, engagement, and motivation.

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About the Author

Hassane Benlaghrissi ***is a Ph.D. student at Sultan Moulay Slimane University, Benni Mellal, Morocco. He is also a high school teacher at Tazizaoute High School, El Kbab, Khenifra. He earned his MA in Women's and Gender Studies from Sidi Mohammed Ben Abdellah University in Fez. He earned his BA in linguistics from Moulay Ismail University in Meknes. His research interests include ICT and Education, Teaching Materials Evaluation, and Language Teaching and Gender Studies.***
ORCID: https://orcid.org/0000-0002-4884-1816