

## **The Contribution of a Course Management System (CMS)-Supported Instruction to Developing Grammar Performance: A Case of Iranian EFL Learners**

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### **Abstract**

Although the use of course management systems has increased significantly in educational settings, these new user-friendly systems have not been widely employed by second language (L2) institutions and practitioners. As an attempt to shed more light on the effectiveness of Moodle as one of the most popular course management systems for educational purposes, the purpose of the current study was to examine the impact of a Moodle-supported language course on the grammar performance of Iranian English as a Foreign Language (EFL) learners. To accomplish this objective, a number of 46 Iranian EFL learners who were the students of two intact classes took part in the research as the participants. One of the classes (n=25) was randomly assigned to the experimental group, and the other class (n=21) was considered as the control group of the experiment. The students of the experimental group were instructed in a blended learning mode in which Moodle was supplemented to face-to-face, traditional teaching, while the students of the control group were instructed traditionally without the aid of Moodle. To measure the dependent variable of the study, a grammar test constructed by the researchers was given to the students as the pre-test and post-test of the experiment. The results of data analysis indicated that the Moodle group students outperformed the traditional group students in terms of grammar performance, suggesting that CMS-supported grammar instruction via Moodle contributed to improving the EFL students' grammar performance. The discussion and the implications of the study were finally presented.

**Keywords:** course management system, Moodle, EFL, grammar performance

### **Introduction**

New developments in technology devices accompanied by more learner-centered approaches in education have given rise to the emergence of more creative and innovative modes of pedagogy (Dobrota, Jeremic, & Markovic, 2012; Benkovic & Dobrota, 2012). In line with this shift of attention, online learning has enjoyed much popularity and has become an integral, supplementary component for traditional face-to-face learning (Lim, Kim, Chen, & Ryder, 2008). This deliberate combination of online learning with traditional, inside-classroom instruction has gained recognition as blended learning, which is claimed to enhance learning and induce more effective instruction (Knutzen &

Kennedy, 2012). With the widespread development of information and communication technology devices more manifested by smart phones, tablets, and touch screen devices, blended learning has become an alluring pedagogic avenue for the new generations of learners. This ever-increasing spread of blended learning, mainly supported by Internet, has found its way into foreign language learning and teaching and has significantly affected L2 classrooms (Blake, 2008; Richards, 2015). Nowadays, the vast majority of L2 practitioners are using Internet as an instrument to improve the quality of their teaching in their classrooms (Jarvis & Krashen, 2014).

In addition, the recent advent of course management systems (CMS) for educational purposes has intensified the necessity of Internet and implementation of blended learning in educational contexts (Park, Yue, & Jo, 2016). A CMS is conceptualized as a software system which can be used by instructors and students and includes technical tools like course content organization and presentation tools, communication tools, learner assessment tools, and tools for managing class materials (Morgan, 2003). CMS is a popular platform to share information and foster social interaction. Because of the pedagogic merits associated to CMS, numerous learning centers have begun to employ different platforms of CMS in their educational systems within the last decade (Carvalho, Areal, & Silva, 2011). One frequently reported merit of CMS its time-saving nature in a sense that it can provide practitioners with further time to be devoted to covering the instructional content and to solving as well as monitoring the students' assignments (Tsai & Talley, 2014). In the meantime, CMS like other divisions of blended learning is likely to promote the learners' strategy use and autonomous learning by assigning further responsibility to the learners and providing them with freedom in choosing their own strategic options in a self-paced learning mode (Winne & Hadwin, 1998). There are numerous course management systems such as BlackBoard, Desire2Learn, Moodle, WebCT etc. Nevertheless, Moodle is considered as the most popular open source CMS.

As far as L2 learning is concerned, CMS platforms, especially Moodle, have been blended with traditional face-to-face language instruction courses to increase both learning outcomes and motivation of the L2 learners (Sanprasert, 2009; Tsai, 2014). The most widely used CMS platforms used in L2 studies is Moodle. Modular Object-Oriented Dynamic Learning Environment, more commonly known as Moodle, serves as a free and open-source course management system. Moodle is argued to be able to promote collaborative interaction and learner-oriented online learning settings (Tsai, 2014). It also provides the users with the opportunity to share their ideas and knowledge, as well as to launch new modules and features which encourages further creativity. Emphasizing further cooperation, Moodle has been viewed as a platform "created through participation rather than via publishing" (Lankshear & Knobel, 2006, p. 45).

Because of the potential pedagogic merits of CMS platforms, numerous schools and educational institutes have devoted considerable time and investment to employing CMS platforms, such as Moodle, in their educational curriculum over the last decade (Carvalho, Areal, & Silva, 2011). However, CMS platforms appear to be less used for L2 instruction especially in EFL contexts. Moreover, Moodle as a CMS platform has remained relatively under-researched or almost absent on the L2 research agenda. As an attempt to partially address such a gap, the current study sought to examine the effect of a Moodle-supported language course on the grammar performance of Iranian EFL learners.

## Review of Literature

Although it is beyond the aim of the present study to review all the bulk of research carried out in this area, to ground the present study, some more illustrative studies researching the effectiveness of the use of Moodle in L2 learning are reviewed below. For instance, Bataineh and Mayyas (2017) investigated the impact of a Moodle-supported language course on EFL learners' reading and grammar competencies in Jordanian context. The participants of the study were a sample of 32 learners of a second language course held by a Jordanian state university. Employing a quasi-experimental research design, the participants were divided into an experimental group (n=17) and a control group (n=15). The experimental students were taught through blended learning in which Moodle was supplemented to their traditional inside-class instruction, while the control group students received only traditional inside-class instruction. The findings of the study demonstrated that the experimental group performed better than the control group in terms of reading and grammar performance. The potential impediment to generalizability of the findings of this study might be its relatively small sample size.

Also, Tsai and Talley (2014) conducted a study to investigate the impact of using Moodle for a strategy instruction program on reading comprehension and strategy use for a sample of EFL learners. In so doing, a particular number of strategies were taught via a Moodle system for the students of the experimental group. The results obtained from examining the difference between pre-test and post-test of the Moodle group revealed that the Moodle-supported course contributed to improving the reading comprehension performance of the Moodle group participants. However, reading comprehension performance of the control group students did not enhance significantly. Additionally, it was found that the Moodle-supported course increased the strategy use of the participants particularly in terms of employing metacognitive and cognitive strategies. The reported shortcoming of this study was the few number of items used in the pre-test of the study.

In another study, Sanprasert (2009) investigated the effectiveness of integrating a traditional face-to-face English class with a course management system in enhancing students' autonomous learning. The participants of the research were two groups of Thai university learners. One group of participants were instructed using CMS, whereas the other group were taught traditionally without use of CMS. Both qualitative and quantitative data collection techniques were employed. Overall, the results of the study demonstrated that CMS played a key role in improving the learner autonomy of the participants of the experimental group. Also, Aikina, Sumtsova, and Pavlov (2015) conducted a study to investigate the impact of implementation of Moodle-based courses for teaching languages to students of higher educational centers in Russia. Reviewing an electronic Moodle-based course designed for the freshmen students of Tomsk Polytechnic University, the authors concluded that Moodle platform might be a very effective e-learning systems which can be implemented for learning the languages. In addition, they claimed that such a blended learning can foster language learning motivations of the users.

In another study, Cordova and Dechsubha (2018) investigated the effects of employing Moodle in enhancing listening abilities of English for Specific Purposes (ESP) students at Vongchavalitkul University. Moreover, the learners' opinions towards using Moodle for language learning were investigated. To accomplish the objectives of this

study, 16 undergraduate ESP students were selected through purposive sampling. As for the treatment of the study, six Moodle-based lesson plans were used. The required data were collected through pre- and post-tests of listening comprehension as well as a self-report scale of learners' opinion towards language learning through Moodle. The results of the study revealed that Moodle-based instruction significantly contributed to improving the listening comprehension of ESP students. Moreover, it was found that ESP students held positive attitudes towards using Moodle for language learning. Similarly, Miao and Mao (2018) examined the effect of Moodle platform on English listening performance of college students. In so doing, 128 non-English major students of a Chinese university participated in this study whose purpose was to compare the effectiveness of Moodle-supported listening instruction versus traditional listening teaching. The results obtained from pre- and post-tests and questionnaire survey revealed that Moodle was effective in improving listening performance of the participants. It was also found that the participants had positive opinions of Moodle-based instruction.

In another study, Wong, Hwang, Choo Goh, and Mohd Arrif (2018) carried out a study to investigate the effects of blending learning, which was implemented employing Moodle as the learning platform, on learning outcomes, motivation and learner autonomy. Moodle was employed for English teaching through short stories. Using a quasi-experimental design, the researchers divided 116 participants into two treatment conditions in which the experimental groups were taught via Moodle, whereas the control groups were instructed traditionally. The data were gathered from a sets of scales and questionnaires. The results of the study revealed that no significant difference existed between the two groups in terms of their academic achievements. Nevertheless, it was found that blended learning supported by Moodle positively affected learners' sense of autonomy and motivation. Also in a more recent study, Gu, Zhang, and Gu (2019) conducted a qualitative case study to investigate the technology-supported constructivist learning environment (CLE) for improving research abilities of Chinese undergraduate English major students. In so doing, the university instructors intended to change an English Writing course into BA Thesis Writing, mediated by Moodle along with multi-dimensional resources, instruments and management. To accomplish the purpose of this research, two BA Thesis Writing classes were investigated employing observation, interviews, and learner products. The results indicated that Moodle significantly improved the learners' learning processes and research abilities. The Moodle platform positively influenced the whole learning experience by sustained pedagogic support, forum discussions, information resources, and instruments. Nevertheless, university instructors had reluctance to use Moodle because they consider it to be both demanding and at variance with norms of Chinese higher education with regard to professional standards, instructional philosophy and educational culture.

In another study, Barrs (2012) conducted an action research to investigate the effect of a Computer-Mediated Communication (CMC) programme on L2 interaction beyond the classroom. In so doing, an online collaborative forum was set up in Moodle in order to provide the participants with sustained and independent out-of-classroom L2 interaction. The program lasted for an eight-week summer vacation period. The findings revealed that the CMC programme set up in Moodle significantly contributed to fostering L2 interaction outside of class. Also, carrying out a mixed-methods study, Bakla (2019) investigated the effect of tailor-made animated cartoons on the correct use of punctuation in EFL writing. In so doing, 112 Turkish EFL learners were randomly assigned to a

control group and an experimental group. As for the purpose of the study, the experimental group used teacher-generated animated cartoons whereas the control group were provided with PowerPoint presentations (PPTs) instead of animated cartoons. All the instruction carried out in Moodle. The overall findings of the study revealed that tailor-made animated cartoons, provided in Moodle, were likely to have enhanced the learners' correct use of punctuation rules. In another study, Gobel and Kano (2014) examined the effects implementing a year-long reading while listening (RWL) program for Japanese EFL university students. The program was designed to provide students with practice in listening to spoken English. The program participants (N = 230) were required to practice RWL and take progress tests as provided in a Moodle module (MoodleReader). For the purpose of this study, learners' gains in reading rate, their vocabulary recognition, their general English proficiency, their attitudes toward the program itself and the MoodleReader were investigated. The findings revealed that RWL had a substantial effect on reading rate and vocabulary recognition, but it failed to significantly affect general English proficiency. It was also revealed that there were negative attitudes toward the RWL program and the Moodle, and that these attitudes influenced the amount of work learners completed in the program.

In spite of the empirical evidence reported by above-mentioned studies on the use of Moodle as a CMS for EFL students, these studies fail to provide a forcible and conclusive evidence on the effectiveness of Moodle in enhancing L2 skills and competencies. Since Moodle is a very new technology in L2 research and is still very rarely adopted by practitioners, further empirical studies are required to be carried out to illuminate the utility of this CMS platform in enhancing L2 abilities for different learners in various contexts. Moreover, because of contextual variables and other intervening factors, the need for conduction of replication studies in education is acknowledged and warranted (Makel & Plucker, 2014). Hence, to shed more light on the utility of Moodle as a popular CMS platform, the purpose of the current study was set to examine the impact of a Moodle-supported blended language course on the grammar performance of Iranian EFL learners.

## Method

The current study was a part of a bigger research project in which the impact of a Moodle-supported language course on several dependent variables were investigated. However, the present paper reports the procedure and findings related to one of the dependent variables (i.e., grammar) under investigation.

## Participants

To accomplish the objectives of the present study, a sample (n=46) of Iranian EFL students took part in the research project as the participants. In fact, they were students of two intact classes studying English majors (i.e., English literature or English translation) at a branch of Islamic Azad University in Tehran, Iran. The participants included both male (N=15) and female (N=31) students whose age ranged from 20 to 24 with the mean age of 21.16. One of the groups (n=25) was randomly assigned to the experimental group, and the other group (n=21) served as the control group of the

experiment. The students of the experimental group were instructed through blended learning in which Moodle was supplemented to face-to-face, traditional instruction, while the students of the control group were instructed traditionally without the aid of Moodle. The duration of experiment was one university semester, equal to 16 weeks. Before beginning the treatment, Oxford Placement Test (OPT) (Allan, 2004) was given to the participants to ensure the homogeneity of both groups in terms of global English proficiency. To statistically compare the mean scores of both groups on QPT, an independent-samples t-test was carried out. The results of the independent-samples t-test (Table 1) indicated that there was no statistically significant difference between the groups in terms of general language proficiency before starting the intervention.

## **Instruments**

### **English Proficiency Test**

In order to ensure the homogeneity of the participants with regard to their general English proficiency, OPT was administered to students of both traditional and Moodle classes. OPT is considered as a suitable test to determine the English proficiency level learners at different proficiency levels (Allan, 2004). It includes a 6 rating scale; students whose score fall between 0-17 are labeled as basic (A1), and students whose scores fall between 18-29 are viewed as elementary students (A2). Those whose scores lie between 30 and 39 are in the lower intermediate group (B1). Those with the scores of 40-47, are considered as upper intermediate (B2) and the students with the scores 48-54, and 54-60 are labeled as advanced (C1) and very sophisticated (C2) levels respectively. The internal consistency of OPT as measured by Cronbach's alpha was reported to be 0.78 in the present study.

### **Grammar Test**

To measure grammar performance of the participants before (as pre-test) and after (as post-test) the Moodle-supported instruction, a multiple-choice test of grammar was constructed and piloted by the researchers. The content of the test was selected from the covered materials of the main course book (Understanding and using English grammar by Azar & Hagen, 2009) adopted for the semester. The opinions of an experienced colleague were taken into account to ensure the content coverage and content relevance of the items of the test. Moreover, the test was piloted with a separate sample of 20 students of English majors before being administer in the present study. The internal consistency of this test as estimated by Cronbach's alpha for the pre- and posttests was reported to be 0.79 and 0.82, respectively.

## **Procedure**

The control group and the experimental group were two intact classes from a branch of Islamic Azad University in Tehran, Iran. Both groups had the experience of being taught with the help of Moodle for their reading course. As for the purpose of the present study both groups were instructed by the same teacher. Understanding and using English

grammar (Azar & Hagen, 2009) was the main coursebook of the two groups. Nevertheless, the students of the experimental group were provided with supplementary materials in addition to traditional in-class instruction. The Moodle-supported group could have access to Moodle inside and outside the classroom. The teacher also was available to provide the Moodle group students with technical support. He also regularly answered the questions in the grammar forum, monitored the peer-feedbacks of the students, and encouraged all the students to have active participation during the course. Grammar forum included asynchronous discussions for all students to read or answer. By checking the logs, the teacher knew what students had done on Moodle and could monitor assignments, forums, and assignments of the students. In addition, the students were occasionally required to upload and submit some grammar exercises and assignments which were graded and commented on by the teacher. The instructional materials on grammar points which were covered inside the classroom were posted on Moodle for the experimental group. As supplementary materials, quizzes, multiple-choice self-evaluation exercises, and PowerPoint slides on the same grammar points were regularly posted. Quizzes included different types of test items such as multiple-choice, true–false, and short-answer items.

## Results

For the statistical analysis of the data collected for the purpose of the present study, the Statistical Package for Social Sciences (SPSS) version 22.0 was utilized. As previously discussed, QPT was given to the students as the language proficiency test to make sure about the homogeneity of the participants of both classes (i.e., Moodle class and traditional class) in terms of global English proficiency prior to beginning the treatment of the study. Concerning the statistical analysis of the QPT scores, an independent-samples t-test was run to compare the mean scores for the two samples. As shown in Table 1, the results revealed that there was not a significant difference in the mean scores for the experimental group ( $M = 44.12$ ,  $SD = 11.20$ ) and the control group ( $M = 43.88$ ,  $SD = 11.76$ );  $t(44) = -.671$ ,  $p > 0.05$ ), suggesting that the Moodle group and the traditional group were not statistically different in terms of general English proficiency prior to conduction of the treatment.

Table 1  
*Results of the QPT for each group*

Groups	<i>M</i>	<i>SD</i>	<i>t</i>	Sig.
Experimental	44.12	11.20	-.588	.671
Control	43.88	11.76		

Then to explore the impact of the Moodle-supported language course on the participants' grammar performance, a set of paired samples t-tests were carried out to compare the grammar scores of the students in both the traditional and Moodle groups on the pre-test and post-test of grammar performance. The results of these matched t-tests showed that there was a statistically significant increase in the mean scores on the grammar test for the EFL learners of both experimental and control groups. As seen in Table 2, there was a statistically significant increase in the grammar mean scores of the experimental group

( $t(24) = -9.64, p < 0.05$ ). Similarly, the increase in the grammar mean scores of the control group was statistically significant ( $t(20) = -7.51, p < 0.05$ ). As the results indicates, the grammar mean score of the experimental group was 20.28 ( $SD = 4.74$ ) on the pre-test and this value increased to 27.56 ( $SD = 4.58$ ) on the post-test, an increase which was statistically significant. In the same vein, the mean score of grammar pre-test for the control group was raised from 19.58 ( $SD = 3.20$ ) to 24.52 ( $SD = 3.47$ ) on the post-test, an increase which was also statistically significant.

Table 2  
*Paired samples t-test for grammar scores in each group*

Group	Pre-test		Post-test		<i>t</i>	<i>Sig.</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Experimental	20.28	4.74	27.56	4.58	-9.64	0.00
Control	19.85	3.20	24.52	3.47	-7.51	0.00

In addition, a one-way analysis of covariance (ANCOVA) was carried out as a follow-up analysis to compare the effectiveness of the two types of grammar instructions employed in the traditional group and the Moodle group. In this analysis, the independent variable was the kind of intervention (i.e. Moodle-supported instruction or traditional, inside-class instruction), and the dependent variable was the scores on the grammar test given after the completion of the treatment. The scores of the students on the pre-test of the grammar test served as the covariate in the ANCOVA analysis.

Table 3  
*ANCOVA results for reading comprehension scores*

Source	Type III Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>Sig.</i>	Partial Squared	Eta
Corrected Model	431.826 <sup>a</sup>	2	215.913	22.170	.000	.508	
Intercept	290.042	1	290.042	29.781	.000	.409	
Pre-grammar	326.616	1	326.616	33.536	.000	.438	
Group	86.478	1	86.478	8.879	.005	.171	
Error	418.782	43	9.739				
Total	32364.000	46					
Corrected Total	850.609	45					

Preliminary checks showed that the ANCOVA assumptions (i.e., normality of data, linearity, homogeneity of regression slopes, homogeneity of variances, and reliable assessment of the covariate) were not all met. As Table 3 indicates, there was a significant difference between the two groups on post-test scores of grammar performance,  $F(1, 43) = 8.87, p = 0.004$ , partial eta squared = 0.17). The results of ANCOVA revealed that the participants of the Moodle group outperformed those of the traditional group on the post-test of grammar. Therefore, it is concluded that Moodle-supported language course significantly contributed to improving grammar performance of the Iranian EFL learners.



## Discussion

The purpose of the present study was set to investigate the effect of a CMS-supported foreign language instruction, implemented by integrating Moodle into traditional face-to-face classes, on the grammar performance of Iranian EFL learners. The findings of the study revealed that the students of the Moodle-supported group outperformed those of the traditional, face-to-face group with regard to grammar performance, suggesting that Moodle as a type of course management system contributed to the improved performance of grammar. The findings of this study are in consistent with those of previous empirical studies (e.g., Aikina et al., 2015; Hsieh & Ji, 2013; Sanprasert, 2009; Tsai & Talley, 2014) which confirmed the effectiveness of Moodle as a viable platform to enhance L2 learning outcomes. More particularly, the findings of the current study verified those of Bataineh and Mayyas (2017), underscoring the fact that Moodle-supported blended learning could contribute to improving students' grammar performance in EFL contexts.

A very plausible justification for the better performance of the students of Moodle-supported group in the present study was the fact that they were actively and regularly engaged in being exposed to instructional slides, doing quizzes and self-evaluations, and participating in forum discussions. Throughout the course, the teacher regularly provided the students of the Moodle class with supplementary materials such as further explanation of grammar points covered in the class, extra activities and exercises accessible through hyperlinks, quizzes and self-evaluations, and short video clips on grammar points. Also, the teacher and students collaboratively posted and had regular group discussions in the grammar forum. The forum discussions not only helped students to share knowledge and discuss the grammar points but it also fostered teacher–student interactions and collaborative learning which resulted in the improved grammar performance of the students of the experimental group. The role of collaborative learning through technology devices in enhancing learning outcomes and motivation of the students has been previously acknowledged in literature (Petko, 2012).

Also, it can be argued that students' further access to extra resources through hyperlinks is likely to have increased the motivation, attention, and active engagement of the Moodle group participants (Perrotta, 2013). Moreover, it can be stated that Moodle encouraged the participants of the experimental group to become more involved in their learning process and this heightened involvement led to their improved performance in grammar. This finding can support the claim that further involvement plays a key role in learning enhancement (Cummins, Brown, & Sayers, 2007). However, it is worth noting that implementation of Moodle or other kinds of blended learning does not guarantee successful and effective learning unless the practitioners and instructors themselves are both willing and competent to employ blended learning in their own classes (Donnelly, 2010). Moreover, the teachers should encourage their learners to have more participation in learning environments supported by various technologies so that they can bring about further social interaction and cooperative learning (Liu, 2010).

## Conclusion

The results of the present study as presented above revealed that the use of CMS-supported language instruction, which was set up in Moodle, was effective in enhancing

grammar performance of Iranian EFL students. In other words, the students of the experimental group who were taught in a blended learning mode where Moodle was added to face-to-face, traditional teaching outperformed the students of the control group who were instructed traditionally without the support of Moodle. The effectiveness of CMS-supported language instruction in enhancing L2 skills and competencies has been also verified by the recent empirical studies in this area (e.g., Bakla, 2019; Cordova & Dechsubha, 2018; Miao & Mao, 2018; Wong et al., 2018).

From the pedagogical point of view, L2 practitioners should disentangle themselves from the traditional, face-to-face classrooms and try to embark on innovative methodologies in order to not only increase learning outcomes but also foster students' motivation, engagement, and interest. Therefore, new technologies and especially course management systems such as Moodle might be good alternative for the aspiring teachers to increase the productivity of their L2 classrooms. CMS platforms have the potential to provide the learners with a variety of options and tasks to choose from. This variety is likely to increase the enjoyment in learning which itself encourages students' better performance in different L2 tasks (Ruso, 2007). Moreover, CMS establish a kind of social network among the students which enhances both their language competencies and their social knowledge.

Moreover, a significant number of studies have underscored the important role of perceptions of both teachers and students in their using Moodle platform (Damnjanovic, Jednak, & Mijatovic, 2015). Therefore, further research should investigate the perceptions of students and teachers in using Moodle in their own instruction. Furthermore, the present study was just a quantitative study and did not use qualitative data to uncover the participants' perceptions of their experience of Moodle-supported language instruction. Further researchers are also recommended to examine the impacts of Moodle-based instructional programs on other L2 skills and components. In addition to employing mixed methods research approaches, bigger samples with various language proficiency backgrounds in various EFL contexts should be recruited to enhance the generalizability of the findings.

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