

The e-Grammar Tutor: Is Moodle Still a Viable LMS for L2?

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Abstract: *This paper seeks to reexamine the relevance of Moodle as a Learning Management System (LMS) for foreign/second language (L2) sentence grammar. With this study, the researcher wants to ascertain whether Moodle-based language practice of grammatically problematic sentences, in conjunction with offline practice, has positive results in improving the online group of students' production of grammatically correct sentences and, more significantly, whether it can be implemented on a larger scale in today's online-dominated language-learning instruction. The students selected for this study were samples of English IV Assumption University (AU) undergraduates randomly selected from different sections taught by this instructor. The proposed research methodology consisted of the e-Grammar Tutor Development and the Implementation (the Experiment). The Independent Samples T-Test and the Paired Samples T-Test results were used to measure the progress and learning gains within the Online Group. The test results show that there is a statistically significant difference between the mean scores of the Online and Offline groups at the end of the Experiment ($p = 0.000$). These results support the writer's alternate hypothesis that a Moodle-based tutoring system for sentence grammar is still an effective and vital asset for improving the grammatical accuracy of L2 learners.*

Keywords: CALL, e-Grammar, LMS, L2, Moodle

Introduction

The use of technology and the Internet has literally forced education to undergo significant changes thereby bringing new methods of teaching and learning (Lopes, 2014). Students are part of the new digital age; their lives revolve around computers, smart phones, games, and online messaging, and, using the gadgets they love, students become more challenged, motivated, and driven which translates into increased language learning gains (Guevara, 2021). Information and Communication Technology (ICT) in education and, particularly, the integration of Learning Management Systems (LMS) play a vital role in today's digital era. For over a decade, for students involved in language education, Moodle-based e-learning has been increasingly considered as the LMS of choice.

Moodle is an open-source LMS allowing developers to tailor the system to individual needs. It also communicates extremely well with many web-based resources: Facebook, YouTube, Wikipedia, etc., allowing users creativity and versatility. The design of Moodle is based on socio-constructivist pedagogy, meaning its goal is to provide a set of tools that support an inquiry-and discovery-based approach to online learning (Brandl, 2005). Furthermore, it purports to create an environment that allows for collaborative interaction among students, it's a program that allows the classroom to extend onto the web. Using Moodle, teachers can post news items, assign and collect assignments, post electronic journals and resources, and more (Devi, Lakshmi, Aparna, 2020).

Over the past decade, Moodle has grown to become one of the most used LMS in higher education practice allowing for each student's activity to be recorded in a log file. Besides analyzing the raw data from log files directly, there is an option to use Moodle plugins that provide learning analytics and enable

the faster analysis of students' behavior and attitudes. Moodle is organized through plugins that represent specific activities and extra features that can be added to the fundamental feature of Moodle courses (Kumari, 2016). He further elaborates on integrating the features of personalized, flexible, and blended learning with them, stressing the utility of Moodle plugins, and also the benefits, challenges, and possibilities of integrating Moodle with mainstream school and higher education. The most used Moodle plugins, which come with basic Moodle installation, are Assignment, Attendance, Choice, Lesson, Page, Quiz, URL, Workshop, Folder, File, Glossary, SCORM Package, Feedback, and Database.

Literature Review

With reference to online language learning (OLL) and L2 learning, few comparative studies exist, despite the clear progress made in the area of materials creation and course design within the field of computer-assisted language learning (CALL). With respect to CALL design, two areas have flourished: tutorial CALL and social computing or computer-mediated communication (CMC). Only recently have OLL practitioners begun to think in terms of integrating both tutorial CALL and CMC together (Li, 2016). The name tutorial CALL is very often associated with grammar exercises of the mechanical type or what people have often referred to as *drill-and-kill*. These exercises offer language students a relatively low level of interactivity and a limited ability to construct meaning independently (Blake, 2009). Fortunately, the teaching of grammar through computer-assisted language learning (CALL), has come a long way from a not-so-distant past when computers only offered structured or drilled response activities (multiple-choice questions or fill-in-the-blank exercises) to help learners review grammar (Alghammas, 2020). Grammatical accuracy continues to be prevalent and language instructors now have at their disposal a plethora of tools to help them create or customize effective and attractive exercises for online language learning.

Another avenue within tutorial CALL employs the use of natural language processing and a modicum of artificial intelligence in order to enhance the type of feedback provided to the student working alone online (Nerbonne, 2003). This approach is known as intelligent CALL, or iCALL, because it seeks to individualize instruction by providing a system of responses and interactions based on an extensive record of each user's exchanges with the tutorial CALL system (Heift, 2010a). iCALL systems are often designed to anticipate students' mistakes, offer helpful suggestions, and keep track of their behavior while using the program. Accordingly, one of the key features of an iCALL system resides in the detailed and individualized level of feedback that the program offers the student, along with keeping track of each student's most common mistakes.

To date, only three iCALL systems have been fully implemented with similar types of activities: E-Tutor for German (Heift, 2010a); Tagarela for Portuguese (Amaral & Meurers, 2009); and Robo-Sensei for Japanese (Nagata, 2010). One of the advantages of an iCALL approach to language learning is that the increased level of feedback significantly raises the students' grammatical awareness. Fortunately, the CALL field has matured beyond the dilemma of choosing which tutorial CALL to select, as long as the curricular choices support activities that contribute to L2 learning (Chapelle, Zhang, 2009). No doubt, the role of explicit feedback either through iCALL or CMC will continue to be a major focus for OLL researchers, (Blake, 2011).

On this background of technology and Internet-driven education, Moodle has emerged as the platform of choice for higher education institutions worldwide as it is based on a social constructionist approach to education, emphasizing that learners can contribute to the educational experiences in alternative ways (Brandle, 2005). Moodle's features reflect this social constructionist approach in various purpose characteristics, such as making it possible for students to post their comments on journal entries of classmates or discuss a topic on an online discussion board. Moodle has great potential for justifying the

statement of social constructionist view. It is a powerful teaching aid to conventional classroom instructions.

Moodle is particularly good for language teaching as it contains many useful and friendly tools to create and operate language courses (Su, 2006). Moodle is a great tool for language tutors because it is a platform to create and save teaching materials easily and it is a collaborative online platform for teachers and students to learn together. Besides creating courses, it is also very useful in allowing students to join online communities to keep themselves updated with the world. Moodle allows the integration of a wide range of resources, from chats and forums to online booklets, a variety of questions, collections of problems and exercises, lecture notes; including any kind of text-based or HTML formatted documents, multimedia resources such as graphics, video or audio, ex. MP3 files, PowerPoint, or Flash-based applications and Java applets. Teachers can provide students with a large number of resources that they cannot usually show in the classroom due to time constraints. Lesson tasks within Moodle can be linked to any resources that are uploaded to one's server or that are available on the Internet. The students' exploration of any of the content-based resources can be easily assessed by using any of the Moodle-based evaluation and feedback tools. Moodle is quite powerful in content creation due to its built-in HTML editor (Aparna, Devi, 2020).

Using technology to teach language skills is not a new concept (Sharma & Barrett, 2007). However, change and acceptance have been slow to catch on in English language classrooms in Thailand. In other parts of the world technology has been integrated into language teaching methodology for decades (Dudenev&Hockly, 2007) but has met with resistance in some Thai schools. Even though it is not yet widespread, many Thai teachers are beginning to accept technology as a tool to better the teaching and learning experience (Yutdhana, 2005). In the Thai language instruction context, many institutions have created the need for developing effective methods in language pedagogy. The English department at Ubon Ratchathani Rajabhat University, for instance, has attempted to construct an e-learning system since 2005, (Dennis, 2013), using Moodle as the software selected to create this online course. The results show that teachers who use Moodle agreed that an online course helped students to learn at their personal convenience and proficiency level. Coming up with one clear solution for students involved in language education today, Moodle-based e-learning is being increasingly considered as the LMS of choice to bridge the resource gap many institutions are experiencing. Support of e-learning can be transferred to teaching and learning and used to reach and motivate learners with special needs. This aspect of E-learning is especially important for students living in remote areas, in non-urban contexts, who may lack authentic materials and contact with the target language and culture,(Suppasetseere, Dennis, 2010).

In his study, Jirayu (2016), somewhat similar to the one conducted earlier by Popovici (2012), investigates the effect of a Weblog-based e-portfolio on the English sentence grammar skills of Thai EFL undergraduate students before and after learning; it also explores Thai EFL undergraduate students' opinions toward learning through a Weblog-based E-portfolio to improve their English writing skills. The participants were assessed for their writing skills by means of a pretest, and then a post-test was given to them after they had studied writing by using the Weblog-based e-portfolio. Furthermore, the participants expressed their opinions by means of reflective journals and questionnaires about the improvements in their writing skills through the use of the Weblog-based e-portfolio. The data obtained were analyzed and the post-test results of the participants were significantly higher than the writing pre-test results. Based on the positive results, the investigator concludes that it may be due to the fact that the participants were encouraged to learn writing by using multimedia technology of the Weblog-based e-portfolio.

Moodle – A Tutoring System for L2?

This researcher believes firmly that a Moodle-based tutoring system designed to offer students online practice of problematic sentence patterns will still show significant learning gains for the online group of students, and that the students will still show a high level of enthusiasm in practicing online. Assumption University, being a major international university in Thailand, has students with different language backgrounds, with Thais being the majority followed by other Asian students. Although they have different L1 backgrounds, most of Assumption University students have Asian first language backgrounds, consequently, they tend to make the same types of errors in their written sentences regardless of their first language (Popovici, 2012). Some of these common errors are:

- determiner-noun disagreement: *this cats*,
- subject-verb disagreement: *they are*,
- erroneous use of modals: *I should to go with you*,
- absence of a necessary plural or determiner: *I like cat*,
- absence of determiner/plural/3rd person singular-s: *student like*,
- fragment sentences: *because I have no money*,
- run-on sentences: *I met my friend yesterday she came back from London*.
- rambling sentences: *John usually gets up before 7 o'clock, but yesterday his alarm clock did not ring, so he was still asleep when his boss called him at 10.30 to ask where he was*.

Most Assumption University students make these mistakes on a regular basis, and it is this researcher's firm belief that an intelligently designed program, created around a Moodle-based platform that can detect these particular errors and provide a clear comprehensive feedback, is the answer to designing a Moodle-based tutoring system for L2 sentence grammar practice.

Research Objective

Significantly, given the current situation where most instruction is done online, this researcher wants to know whether Moodle-based language teaching and learning is still a valuable asset for online instruction, and most importantly, whether it can be implemented on a larger scale at Assumption University and beyond. The objective of this research is to assess whether Moodle is still an effective and vital asset for improving the grammatical knowledge and accuracy of L2 learners. To achieve this objective, the research question is

Is Moodle still a vital asset for improving the grammatical accuracy of L2 learners?

Hypotheses

Thus, the Null Hypothesis is

Ho: A Moodle-based tutoring system for sentence grammar is no longer an effective and vital asset for improving the grammatical accuracy of L2 learners.

And the Alternate Hypothesis is

Ha: A Moodle-based tutoring system for sentence grammar still is an effective and vital asset for improving the grammatical accuracy of L2 learners.

Research Methodology

This study is based on the assumption that extra, online practice of certain grammar problems, has a positive effect in improving participating students' production of correct sentences, and that a Moodle-

based tutoring system for sentence grammar is still an effective and vital asset for improving the grammatical accuracy of L2 learners. As mentioned earlier, in this study the author seeks to assess whether Moodle is still an effective and viable option today amid the plethora of tutoring systems available and that Moodle-based practice of problematic sentences, in conjunction with offline practice, has positive results in improving the online group of students' productions of grammatically correct sentences. This endeavor is of significance in today's internet-driven online language learning (OLL), and of urgency, given the current situation in which most instruction is done online.

Sample Population and Informed Consent

The samples selected for this experiment are two groups of students randomly selected out of the larger population of English IV Assumption University undergraduates and, based on the results, the researcher attempts to generalize the characteristics of these sample groups as the characteristics of the larger population of English IV students, with the aim of demonstrating that a Moodle-based e-grammar tutor is still a viable and effective language learning management system.

Although relatively little empirical research has been conducted on the study of ethics in the field of English as a second/foreign language, there are ethical issues involved with regards to recruiting university students as research subjects and/or promising them benefits in the form of credits for participation (Sterling, 2015). This research was done in an ethically responsible manner and in line with two major responsibilities of the researcher, namely, to secure the privacy and freedom from coercion for participants and, at the same time, to balance confidentiality with the need to present results to the class openly. Since this study was conducted by this researcher who was also the instructor, students were aware of, and familiar with, routine testing at the beginning and end of semesters. They were informed of the short, extra tutoring practice given at the end of each class, and were happy to participate voluntarily.

Instrument and Design

During the past ten-year period, the contents of the English IV course being taught by this instructor have not changed, and this fact has driven this researcher, who has been teaching and collecting data from English IV students at Assumption University for over fifteen years, to determine whether their preferences, attitudes and degree of involvement have changed, and importantly, whether they still show significant language learning gains as the result of Moodle-based online instruction. This current experiment was carried out over several semesters with English IV Assumption University undergraduates from different sections, randomly selected for the Offline Group (1) of 80 students, and for a similar group of 80 students for the Online Group (2).

The students from the online group were given a Moodle account and access to the server provided by Assumption University. All participating students in this longitudinal study, both the Offline Group(1) and the Online Group(2), were pre-tested at the beginning of the two semesters to assess their level of mastery of certain basic sentence patterns, and post-tested at the end, to assess their improvement. During the regular semester work, the online group was offered ten Sessions, each one consisting of one or several problematic sentence patterns, the sentences being supplements to those they practiced in class. Examples of such problematic sentence patterns:

-absence of determiner/plural: *I like dog.*

-fragment sentences: *because I have no money.*

The proposed research methodology consisted of the e-Grammar Tutor Development that is the designing of the two tests and of the ten sessions to be administered to the online group, and of the Implementation (the Experiment). The design of the development stage was undoubtedly the most challenging aspect of the e-Grammar Tutor. In the first part of this development stage, the two tests, Pretest and Posttest, were

identical and designed based on the content of the ten Sessions to be administered to the online students. One sentence pattern for each Session was given in both pretest and posttest. The tests consisted of ten such session-based questions, each one marked 10 points, with the total maximum score per student for one test being 100 points. The second part, the design of the sessions to be practiced by the online group, consisted of ten Sessions based on the content of the English IV textbook and also based on weekly class-work practice. Each session consisted of two parts:

Session Sentence Pattern(s)-(to be studied)

Session Activity - (to be practiced)

To summarize, both tests were administered to both groups of students, the control group (offline) and the online group, while the ten sessions, only to the online group. This was to assess the difference in learning gains between a group that has only class-work practice and the one that benefits from extra online practice.

At the end of the experiment, all participants from the online group were given a questionnaire. They were surveyed in order to measure their attitudes towards the e-Grammar Tutor. They were asked how they generally felt participating in this experiment and their overall opinion about studying and practicing grammar using Moodle. Some of the questions asked were

How useful was the e-Grammar Tutor for improving your grammar, and

Do you think the e-Grammar Tutor has helped you to improve your grammar?

Data Collection and Analysis

The Pre-test results for both groups of participating students were stored in an Excel file. At the end, the Post-test concluded the data collection process. Identical with the pre-test, the post-test also consisted of the same ten questions, each one representing one session. All test scores were initially stored in an Excel file, and then transferred to an SPSS data file. The table below presents the descriptive statistics for Group 1(A), pretest-posttest, and for Group 2(B), pretest-posttest:

Table 1: Descriptive statistics for pretest-posttest, Groups 1(A) and 2(B)

Descriptive Statistics							
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
Gr.A-Pretscore (Offline)	80	45.0	53.5	49.606	1.7515	-.423	.269
Gr.A-Postscore (Offline)	80	54.5	65.0	61.025	2.2974	-.145	.269
Gr.B-pret-score(Online)	80	40.5	53.0	49.633	1.8210	-1.500	.269
Gr.B-postscore(Online)	80	76.0	86.5	81.105	2.5916	.547	.269
Valid N listwise	80						
Statistics							

		Gr.A- Pretscore (Offline)	Gr.A- Postscore (Offline)	Gr.B- pre-score(O nline)	Gr.B- postscore (Online)		
N	Valid	80	80	80	80		
	Missing	0	0	0	0		
Mean		49.606	61.025	49.633	81.105		
Median		49.500	61.000	49.500	80.500		
Mode		49.5	59.5 ^a	50.5	79.0		
a. Multiple modes exist. The smallest value is shown							

The Independent Samples T-tests were performed in order to assess whether there was a statistically significant difference between the mean scores of the 2 Groups at the beginning of the Experiment (Pre-test), and at the end of the Experiment (Post-test). Table 2 presents the independent samples t-test for Groups 1(A) and 2(B) pretests:

Table 2: Independent Samples T-test for Pretest

		Group Statistics								
Groups: 1 off 2 on		N	Mean	Std. Deviation	Std. Error Mean					
Pre-tscore	1	80	49.606	1.7515	.1958					
	2	80	49.633	1.8210	.2036					
		Levene's Test		Independent Samples Test						
		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
Pre-tscore	Equal variances assumed	.070	.791	-.093	158	.926	-.0262	.2825	-.5842	.5317
	Equal variances not assumed			-.093	157.761	.926	-.0262	.2825	-.5842	.5317

Independent Samples T-test for Pretest

The Pretest results show a *p-value* of **0.791** and a *Sig. (2-tailed)* of **0.926** (not significant)

Table 3: Independent Samples T-test for Posttest

Group Statistics

		N	Mean	Std. Deviation	Std. Error Mean					
Post-score	1	80	61.025	2.2974	.2569					
	2	80	81.105	2.5916	.2897					

Levene's Test for Independent Sample Test										
		Equality of Variances				t-test for Equality of Means				
		F	Sig.	T	df	Sig. (2tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Post-score	Equal variances assumed	1.724	.191	-51.859	158	.000	-20.0800	.3872	-20.8448	-19.3152
	Equal variances not assumed			-51.859	155.760	.000	-20.0800	.3872	-20.8448	-19.3152

Independent Samples T-test for Posttest

The Posttest results show a *p-value* of **0.191** and a *Sig. (2-tailed)* value of **0.000** (significant).

Results and Discussion

The results of these tests show a Pre-test *Sig. (2-tailed)* value of **0.926** (not significant), and a Post-test *Sig. (2-tailed)* value of **0.000** (significant). In other words, the results show that there was no statistically significant difference between the mean scores of Group 1 and Group 2 at the beginning of the Experiment and that there was a statistically significant difference between the mean scores of the two groups at the end of the Experiment. The mean score of 81.1050 of the Online Group was higher than the mean score of 61.0250 of the Offline Group underlining the conclusion that the *e-Grammar Tutor's* "treatment" was effective.

The Paired Samples T-test was carried out in order to assess the improvement of the Current Online Group during the interval between the Pre-test and the Post-test. The result of the test shows a mean of 59.7500 (Pre-test) and 81.2500 (Post-test), and a Paired T-test *Sig. (2-tailed)* value of 0.000 (significant). The Paired Samples T-test results underline the conclusion that the *e-Grammar Tutor* was effective in helping students improve their sentence grammar, thus disproving this researcher's null hypothesis.

Cronbach Alpha Reliability Test was performed in order to test the reliability of the questionnaire. For this questionnaire, the researcher has selected three Likert-type questions with the aim of measuring how the current group of participating students felt about their current online experiment using Moodle as a learning management system. Each question was a 5-point Likert item, from "strongly disagree" to "strongly agree". The Cronbach's alpha was run on a sample size of 20 students. The Cronbach Alpha Reliability Test for the Learning Management System showed an Alpha coefficient of 0.7328 (high). Considering the fact that Cronbach's alpha reliability coefficient normally ranges between 0 and 1, and that the closer the coefficient is to 1, the greater the internal consistency of the items in the scale, this researcher is happy to report an alpha coefficient that is higher than 0,8 thus concluding that the questionnaire was reliable. The results of this questionnaire given at the end show a positive attitude participating students have towards the *e-Grammar Tutor*. The majority agree that the Moodle-based practice in conjunction with classroom practice was useful and has helped them improve their sentence grammar. They also found the Moodle is easy to navigate through and easy to access the activities in order to repeat the attempts, or to go back to a particular session for more study.

Conclusion, Limitation, and Suggestion

The *e-Grammar Tutor* is a Moodle-based tutoring system designed to help English IV students from Assumption University the chance to improve their sentence grammar online. It is also a practice-based system in that it presents certain sentence patterns to be studied, followed by related activities to be

practiced repeatedly. The 80 online students participating in this experiment have shown a high degree of enthusiasm from the beginning to the end of the study. This was exemplified by the number of attempts for each activity, often exceeding a total of 120. Also, the results of this current experiment show significant learning gains for the participating students. Both the Independent Samples and the Paired Samples T-test results underline the researcher's conclusion that the *e-Grammar Tutor* was effective in helping students improve their sentence grammar, thus validating this researcher's alternate hypothesis. These results are consistent with the researcher's assumption that extra, online practice of certain grammar problems has a positive effect in improving their production of correct sentences.

Although this study is limited to samples of Assumption University English IV students randomly selected out of the larger population of undergraduates, based on the results, the researcher attempts to generalize the characteristics of this sample group as the characteristics of the larger population of English IV students, with the aim of demonstrating that a Moodle-based LMS designed for online practice of grammatically problematic sentences in conjunction with offline practice, has positive results in improving the online group of students' production of grammatically correct sentences. Significantly, the author seeks to assess whether Moodle is still a viable and effective language learning management system and whether it can be implemented on a larger scale in today's online-dominated language-learning instruction. Clearly, the implications of the outcome of this research go beyond Assumption University English IV students, and beyond AU students: students from other universities, as well as all those interested in improving their sentence grammar can benefit from this research. This research was done with all these students in mind.

Certainly, this project needs to be replicated, improved and expanded in the future. One such area of exploration would be the effectiveness of other learning management systems, e.g. Microsoft Teams, currently in use at Assumption University for online instruction. From a language learning/teaching point of view, there are many other sentence grammar problems to be addressed with infinite exploration possibilities. This researcher already envisions a Practical Tutor expanded to include a major area of controversy, that is, that of grammatical corrective feedback (CF). For those who have the vision to see the potential of the Practical Tutor as a vital and effective tool for sentence grammar practice, the possibilities are limitless.

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