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Computer-Based Instruction: How a Web-Based Course Facilitates English Grammar Instruction

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Abstract

This study aimed to investigate the effects of Computer-Assisted Language Learning (CALL) as compared to Teacher-Driven Instruction (TDI) on the achievement of EFL undergraduates in Saudi Arabia. The instructional material dealt with modal English language verbs. This research was carried out on a sample size of 68 EFL undergraduates divided into two equal groups namely: experimental (CALL) group and control (TDI) group. The control group was taught with the regular prescribed textbook while the experimental group was given a unique Web-Based instructional material based on Hot Potatoes as a language learning software. Two tests were conducted, pre-test and post-test with both groups at two intervals. The pre-test was undertaken immediately at the end of the instructional period, and a delayed post-test three weeks after the instructional period. Findings revealed that the performance of the experimental; (CALL) group was significantly better than that of the control (TDI) group on both post-tests, however, the performance of both groups on the immediate post-test and delayed post-test had shown a considerable improvement.

Keywords: Computer-Assisted Language Learning (CALL), Computer Aided Instruction (CAI), English Language Instruction, Teaching English Grammar, E-Learning.

Introduction

The use of computers and its applications has become widespread in all academic institutions. Its usage has expanded dramatically in the recent times and a majority of language teachers have started to visualize about implications of computers for language learning and teaching (Brown & Warschauer, 2006). Researchers have also found that using computerized language instruction programs especially with multimedia components can generate students' interests and motivation (Stepp-Greany, 2002). For instance, CALL programs contribute to increase learners' motivation by personalizing their learning as they use familiar but challenging learning contexts, multimedia material and encourage autonomy in learning (Kawamura, 2007; Hartoyo, 2006; Traynor, 2003). Traynor (2003) also states that CALL programs help students make their own choices of what and when to learn, how much time to spare for an activity or what unnecessary items to skip, thus promoting autonomous and self-reliant learning. Similarly, Tafazoli & Golshan (2014) report that CALL programs have the merit of encouraging collaboration and communication with less anxiety among learners in learning activities. They also emphasize that CALL enables learners to access and evaluate their performance, and receive immediate feedback related to their responses and performance.

Owing to a rapid increase in the use of technology for instructional purposes, in the Kingdom of Saudi Arabia (KSA), there has been a paradigm shift in the manner English language lessons are delivered to undergraduates in universities. Past research findings report that CALL has though remarkably enhanced the quality of language instruction and learning outcomes in EFL situations, (Kilickaya, (2007); Salaberry, 2001; Brown & Warschauer, 2006), but without any consistent results. For instance, the findings of Kilickaya (2007), Muir-Herzig (2004), Allum (2002), and Dewhurst, Macleod & Norris (2000) reveal almost similar language learning outcomes in the use of computer-based and teacher-based approaches. Additionally, no significant difference in learners' achievements was reported in spite of their exposure to CALL programs.

There are studies that enquired whether the use of electronic instructional material with multi-media tools such as electronic games, animated graphics, problem-solving activities, and attractive English language settings should lead to a positive effect on the learning outcomes (Kilickaya, 2007). It was also investigated whether such features attached to electronic instructional material promote a positive attitude among learners towards computers and language learning blended together (Antwi & Anderson, 2015; Oz, 2015). There are also studies highlighting the need to implement CALL programs for learning purposes (Talebi & Teimoury, 2013; Warchuaer, 2011). Kenning (2007) argues that the so claimed pale efficacy of using CALL for language instruction could be attributed to making quick decisions to implement new computer applications in classrooms without an accurate evaluation of their effectiveness.

This research study focuses on the effectiveness of using CALL programs in grammar instructions and find how to make it a useful supplement in communicative language teaching. A CALL program must help learners learn at their own pace, choose activities or exercises to meet their requirements and interests and receive feedback on their performance throughout the learning process. It is also often observed that teachers require more time to define, explain and practice grammar drills and exercises using computer applications in order to make their instructions more responsive to learners' needs. Hence, to cope up with these issues, it was expected that teaching professionals should design such instructional software that is capable of addressing deficiencies of other programs presented for e-learning purposes.

The University of Victoria in Canada developed a free language learning software called Hot Potatoes, which has the potential to deal with learners' needs and improve teachers' instructional performances. The software has been itemized as a component of one of the courses, CALL, in the undergraduate study program at Prince Sattam bin Abdulaziz University (PSAU), KSA. To researcher's knowledge, the effectiveness of this software has not been investigated empirically in the Middle East context. The present study, therefore, evaluates the efficacy of using Hot Potatoes in teaching English language modal verbs as part of an English Language Grammar Course (ENG1250) for Saudi undergraduate students. Findings of this study would reveal how CALL programs such as Hot potatoes can assist English language instructors at Saudi universities in teaching Grammar and how such programs could contribute to achieving learning outcomes of high quality.

Literature Review

Ever since CALL programs started to be used in teaching and learning during the 1960s, the use of computers in language instruction has remarkably increased with a positive effect on language learning outcomes. Past research studies on learning English as a foreign/second language have also stated that integration of technology in teaching and learning systems can improve academic performance, enhance motivation, and promote learning (AbuSeileek, 2004; Al-Mansour & Al-Shorman, 2012; Blake, 2000; Brown & Warschauer, 2006; Ghorbani & Marzban, 2013; Egbert, 2002; Ellis; 2003; Kenning, 2007; Ma Qing, 2007). The introduction and implementation of CALL programs have also proved one of the successful strategies and approaches that are used to improve students' academic achievement, especially that of language learning and teaching.

Engaging learners of English in authentic two-way communication seemed unrealistic until recently (Kenning, 2007). It is made possible through CALL programs that use videos, animations, texts, and explanations to provide learners with rich input and expose them to target grammatical items required in real life situations. Brown & Warschauer (2006) assert that CALL programs encourage students to become more self-reliant, confident and willing to actively participate in the learning process especially when the learner-centered instruction has been found to be more efficient than teacher-centered instruction. Manurung (2015) also observes that the implementation of contextual internet-based instructional material improves students' speaking skills. Hartoyo (2006) also lists a few advantages of CALL programs like they help students to pace their learning according to their own need and interests.

A significant empirical study by Kenning (2007) has found evidence that CALL allows students to have more control over their learning and that it helps teachers to address the issue of individual differences of learners. The study deals with the question of how CALL has brought changes in language learning methods leading to a positive influence on learning outcomes. The study also attempts to find why learners often score poor grades. Kenning (2007) argues but with little evidence that rapid development of technology could have made a pressure on users as well as on the designers of instructional material and software. He also argues that often teachers are pushed to implement such technological applications hastily without an accurate evaluation of their benefits.

Hartoyo (2006), in another study, reports a few other advantages of CALL as the flexibility of time feature that characterizes CALL which offers the learner the chance to choose what topic to learn at the suitable time he/she prefers. CALL can also offer learning programs that cater to individual differences between learners. On the other hand, Ellis (2003) adds that TDI of English language could be monotonous and even frustrating; therefore, students lack motivation and interest in language learning sessions. However, Brown & Warschauer (2006) argue that through CALL, learners could learn better with the presence of language games and multimedia materials. A few research findings do not hint at giving a priority to using CALL in the learning environment; however, they reveal that TDI and CALL lead to similar learning. In his study on the effect of CALL Turkish learners' achievement in the TOEFL exam in all three phases: grammar, reading and listening, Kilickaya (2007) finds no statistically significant difference in the scores between the users of control and experimental groups. Similar findings are stated by Muir-Herzig (2004), Allum (2002), and Dewhurst, Macleod & Norris (2000).

However, in the current times, new advancements in technology have made CALL more capable

to provide rich inputs in the form of integrated multimedia programs. There are now available explicit grammar explanations that can be viewed and reviewed at the learner's own pace. Using multimedia in CALL enhances students' achievement and reduces learning time by 30% if compared to TDI (Ragan, Boyce, Redwine, Savenye & McMichael, 1993). With the massive advances in computer applications that took place since that time when Ragan et al. (1993) conducted their meta-analysis study, one would find it reasonable to say that learning outcomes and practices have improved remarkably. Ghorbani and Marzban (2013) investigated the effect of CALL on improving students' learning of grammar. Results of the study showed that the achievement of the experimental group who learned grammar through the CALL approach outperformed the achievement of the traditional TDI group on the post-test. The researchers also stated that integrating technology into the curriculum can facilitate grammar learning both inside and outside classrooms.

In a recent study, Ghafoori, Dastgoshadeh, Aminpanah & Ziaei (2016) investigated the effectiveness of implementing the CALL approach in improving learners' grammar in their writing skills. Their findings indicated that CALL helped the learners improve their writing abilities using correct grammatical structures. Similar results were achieved by Abu Naba'h, Hussain, Al-Omari & Shdefat (2009). Their results indicated that teaching the passive voice structure to Jordanian high school students using CALL was significantly more effective than using the traditional approach. Torlakovic and Deugo (2004) also studied the effectiveness of CALL systems and the conventional approach driven by teachers on improving learners' abilities to use adverbs correctly in English language sentences. Results of the study revealed that the performance of the CALL group was significantly better than that of the teacher-driven group. Kilickaya (2007) has also investigated the effects of computer-based instruction, teacher-driven instruction, and teacher driven-grammar instruction supported by computer-based instruction on students learning English grammar. Findings of this study emphasized the positive effects of using computers in learning adverbial clauses. The participants who were instructed by using both computer-based and teacher-driven grammar instruction, supported by computer-based materials, scored higher than those who received only traditional instructions. In a quasi-experimental study, Olibie (2010) also investigated the effect of computer-assisted language learning versus the conventional English language instruction on improving Nigerian junior secondary students' English grammar. Analysis of the scores on the grammar proficiency tests revealed that the performance of the CALL group was significantly better as compared to their counterparts of the conventional English language group.

In Saudi context, Al-Jarf (2005) investigated the effect of integrating online learning on improving Saudi first-year college students' performance and attitudes towards grammar learning from home. Results of the study showed significant differences between the group who accessed the online learning materials from home and the group without the online materials. The study concluded that in learning environments where technology is unavailable to EFL students and instructors, use of an online course from home and even as a supplement to in-class techniques helps motivate and enhance EFL students' learning and mastery of English grammar. Al-Mansour and Al-Shorman (2012) also investigated the influence of computer-assisted language learning compared to the conventional teacher driven instruction on Saudi students learning English at King Saud University. The experimental group used software developed by the researchers alongside the traditional approach to improving students' reading skills, vocabulary and English grammar; while, the control group attended the traditional language learning classes without using computers. Findings of the study revealed that the performance of the experimental group who used the specially prepared software for learning reading, vocabulary, and grammar alongside the traditional

approach had a positive effect on the students' achievement of the experimental group.

This review of the literature revealed that many researchers had asserted the positive influence of CALL on English language learning outcomes. Researchers indicated that using CALL programs can be more beneficial and efficient than using the traditional methods of grammar instruction. However, this review also showed the relatively small positive effects of CALL and consequently there is a vital need for a more in-depth study of the impact of CALL compared to TDI on English grammar learning for Saudi learners of EFL. It is also important to point out that the need to study the effectiveness of using Hot Potatoes to teach English language grammar for Saudi students is urgent. Although the Ministry of Education in Saudi Arabia has been using Hot Potatoes for a few years and is still using it as a tool to develop e-materials to support the instructional curriculum for the public schools, its effectiveness in improving learning outcomes at least for English language grammar has not been confirmed in the Saudi situation, to the researcher's knowledge.

Objectives of Study

This study aimed to investigate the effectiveness of CALL using *Hot Potatoes* in teaching and learning the English language modal verbs for Saudi undergraduate students. The effectiveness of CALL has been compared to the TDI approach. The study proposed that building up Web-based instructional material rich in Hypermedia with the use the numerous features of *Hot Potatoes* would give students more significant opportunities to practice the target grammatical items according to their own pace, interests, and needs. Moreover, it would help students become more capable of using them in real-life situations. Accordingly, this study aimed to find out whether CALL compared to TDI of the English modal verbs as part of English language grammar could significantly improve undergraduate Saudi students' learning achievements when measured via a grammar test of modal verbs. It also sought to find out which of the two approaches could lead to longer-lasting learning achievements of modal verbs as measured by the delayed post-test of modal verbs.

Questions of the Study

1. Are there any significant differences ($p<.05$) between the mean scores of the groups on the grammar achievement test for English modal verbs of Saudi undergraduate students due to methods of instruction (TDI vs. CALL)?
2. If yes, which method of instruction (CALL vs. TDI) causes significantly better learning outcomes ($p<.05$) as measured by the immediate post-test of modal verbs? And which method of instruction (CALL vs. TDI) causes significantly longer lasting learning outcomes ($p<.05$) as measured by the delayed post-test of modal verbs?

Methods and Procedures

Instructional Materials

The instructional material was extracted from the textbook suggested in the course description (Oxford Practice Grammar, Intermediate) to teach English language modal verbs. Eleven functions of the modal verbs were targeted for instruction in both of the control and the experimental groups, as shown in Table 1.

Table 1
English Language Modal Verbs and their Functions Taught

	Modal	Function
1	can, could, be able to	Ability
2	can, may, could, be allowed to	Permission
3	may, might, could, must,	Possibility & Certainty
4	must, have to, mustn't, needn't	Necessity
5	should, ought to	Advice
6	can, could, would	Polite requests, asking for things
7	shall, should, can, could	Suggestions
8	shall, will, can, would,	Offers
9	will, won't, would	invitations
10	{should/may/could/can't/must/might} + have + past participle	Possible past events
11	{Should have/ought to have} + past participle	When someone didn't do the right thing

The functions of these modal verbs as presented in the textbook were presented with examples and drilling exercises. For the experimental group (CALL) these drilling exercises in addition to other tasks built up by the researcher in the form of task-based activities uploaded on computers using the *Hot Potatoes* software.

CALL Software: Hot Potatoes

This *Hot Potatoes* suit is comprised of six different functions or applications. Each function can be used to create different types of interactive Web-based exercises. The instructional materials or data, in the form of texts, questions, answers, animations, hints, videos, and feedback, are posted on the Website for *Hot* Potatoes. The software presents the data to the learners through its six functions (Arneil, Holmes & MacGregor, 2001). Arneil et al. (2001) reported that *Hot Potatoes*' services and applications go in line with the preference of researchers and educators to see on language learning software. This software provides learners with authentic learning situations, integrate the language skills using its multimedia features, offers learners with real control over their learning, and it keeps the focus on language without sacrificing content (Warchuaer, 2011).

The six different interactive functions appearing on the home page of the program are *JQuiz, JMix, JCross, JCloze, JMatch,* and *The Masher* (Figure 1). Each item of these refers to the type of exercise the function creates. *The Masher* component is used to build up an instructional unit or Web page including all kinds of materials and tasks that constitute the five different features of *Hot Potatoes*. Figure 2 shows an example of a *JQuiz* that requests the learner to fill the blanks with the correct form of the modal verb. The Web page offers the user with some interactive features like asking for a hint, checking the answer and receiving a kind of feedback depending on the type of response submitted. Figure 3 shows a *JMix* exercise as a standard example to train users to become familiar with the structure of sentences using modal verbs.

One of the useful features of this software is that it is easy for the teacher to use to build the instructional materials and the task-based activities as Web pages for the participants according to their needs, interests, and level of proficiency. It is not necessary for the designer of the instructional materials to know any basic knowledge of programming. Its value depends a lot on teachers' pedagogical creativity and knowledge of the language so that the Web-Based instructional materials can cope with learners' interests and needs (Winke and MacGregor, 2001).

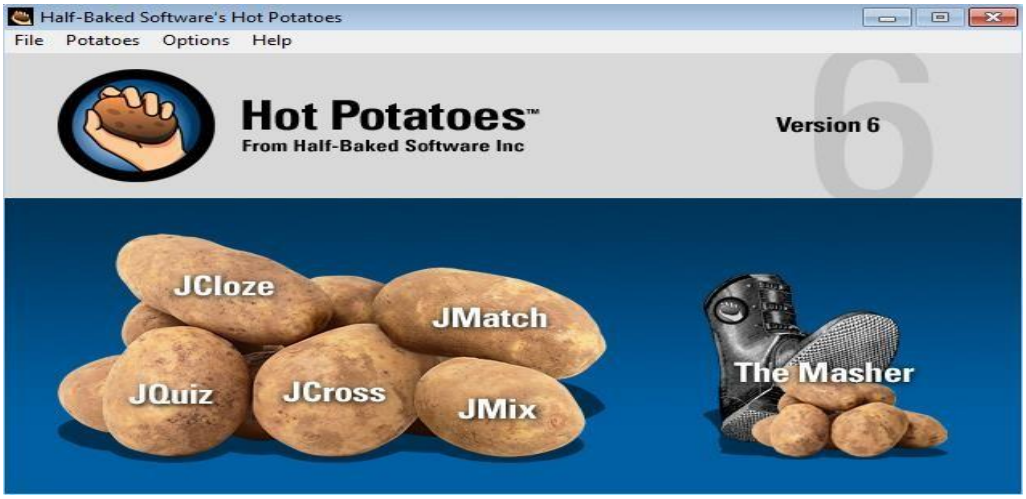

Figure 1. Six different functions of Hot Potatoes

Many exercises in addition to those existing in the textbook were created to offer learners the chance for more practice and drilling at varying levels of complexity and interest. Students in each group of the study were exposed to these exercises, but in different modes according to the instructional method.

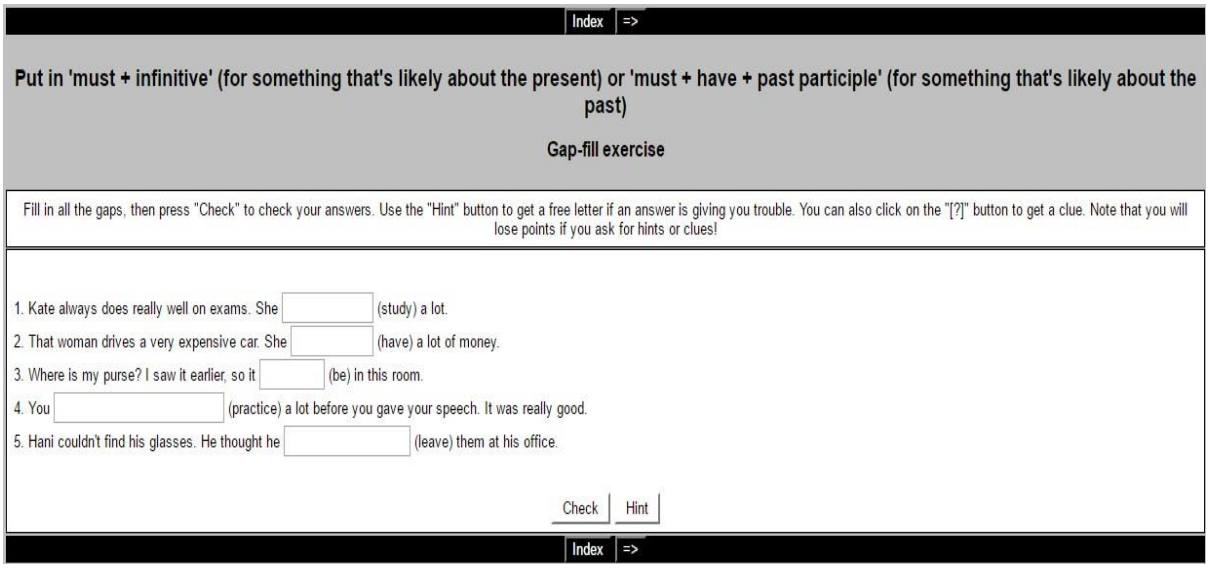

Figure 2. JQuiz exercise: Fill the blanks with the correct modal verb

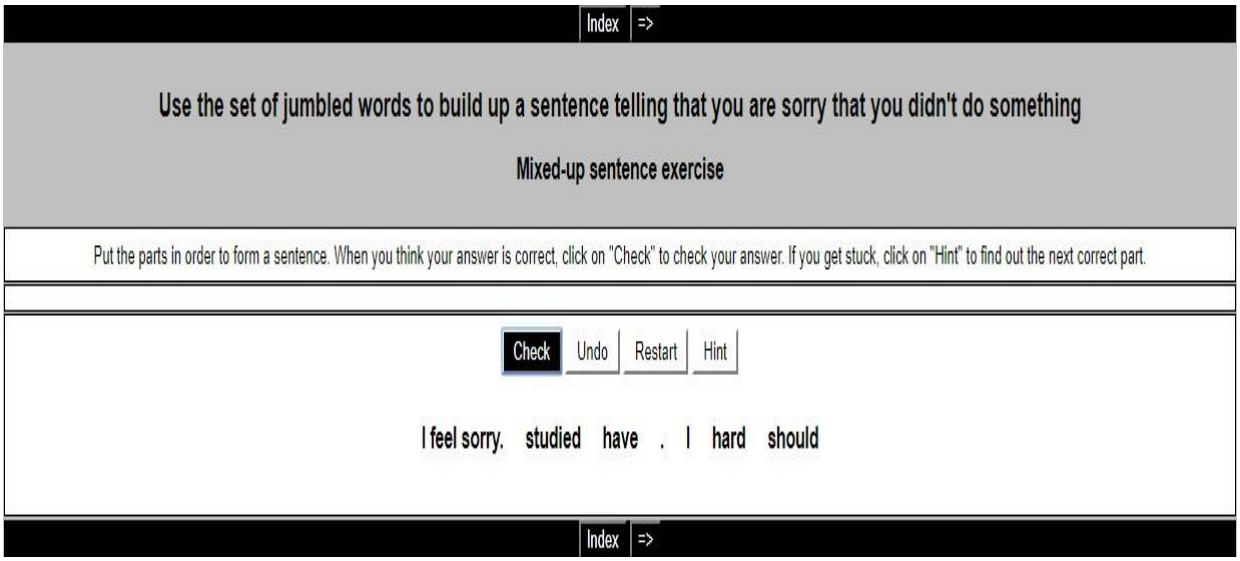

Figure 3. JMix exercise: form a meaningful sentence using the words given

Participants and Design

The quasi-experimental design aimed to compare the performance of students in a performance test of modal verbs in English through the two instructional approaches to which they were exposed. The independent variable of the study was the instructional approach implemented to teach the modal verbs of English. Two instructional approaches performed included CALL using the software *Hot Potatoes* and the regular TDI. The dependent variable, on the other hand, was students' achievement scores on the immediate and delayed post-test.

The participants of the study consisted of all the undergraduate students enrolled in the grammar course (ENG 1250) of the academic year 2016-2017 in the Department of English at Prince Sattam bin Abdulaziz University. A group of 68 students was recruited and divided into two groups. Thirty-five students were registered in one group and other 33 students in the second group. Eight of the 68 students were excluded from the two groups because they participated in piloting the achievement test. The two groups with 30 participants in each, were assigned to the control and the experiment instructional classes randomly. The remaining eight students registered in the course attended the courses in their groups, but their scores on the tests were excluded from the data to avoid the effect that could take place due to their exposure to the test during the piloting stage.

The control group which was assigned to the teacher-driven instructional approach attended the classes to learn the modal verbs of English in a regular hall using the textbook (Oxford Practice Grammar, Intermediate) recommended by the course syllabus without using computers. For this group, the teacher followed the traditional approach of instruction which is described by Brown (1994) as "the process in which the teacher presents the materials to the learners (p. 45). So the teacher explicitly followed the textbook during the class periods. Their function was to start with a preview of the topic, explain the use of the modal verb in the sentence structure, ask the participants to work on the exercises or train individually or in groups, evaluate the performance of the students and finally present comments.

The experimental group (CALL) on the other hand attended the classes to learn the same modal verbs in a computer lab using the software *Hot Potatoes*. The instructional materials, prepared by the researcher depending on the course textbook using *Hot Potatoes* were uploaded to the 35 devices in the teaching hall.

Achievement Test

The researcher constructed an achievement test to examine the participants' knowledge and ability to use the English language modal verbs to address the research questions of the study. This test served as a pre-test tailored before enrolment in the experiment, and as post-test (immediate & delayed) tailored at two sessions after the end of instruction. Immediately after the end of instruction, students sat the immediate post-test. However, for the second session, the same students sat the delayed post-test three weeks after the immediate one because real learning is that which lasts for longer times (Haynie 1990). This delayed test aimed at examining the delayed effect of the two instructional methods on students' long-lasting learning achievements.

The initial copy of this achievement test consisted of 63 items, covering these two aspects of knowledge and ability to use the modal verbs targeted. The questions were of three different types that included fill in the blanks, multiple choice, and complete the sentences. The students were also asked to complete a dialogue that required using the modal verbs they studied according to the situations included to assess their production abilities of modal verbs. This part of the test formed about a quarter the items of the test. The test was administered four days before enrollment in the experiment to establish its reliability. A group of 8 students (5 and three students from the experimental and the control groups consequently) were randomly chosen from the two groups to sit the test. Calculations of the students' scores on this test indicated that the reliability value was above 0.78, and so the test was accepted for that level. Teachers and ESL specialists from the Department of English examined the first draft of the test for content validity and their suggestions for changes were eventually incorporated into the final version. This test was then administered three times to assess students' proficiency before enrollment in the experiment (Pre-test), their ability immediately after attending the instructional stage (Immediate Post-test), and three weeks later (Delayed Post-test).

Statistical Analysis

The independent variable of the study was the instructional approach implemented in the experiment (Teacher Directed Instruction - TDI vs. Computer-Assisted Language Learning – CALL). The dependent variable, however, was the performance of the students at the end of the experiment on the grammar test (immediate and delayed post-test). The *t*-test using the SPSS software was used to analyze the data collected to investigate the effectiveness of the two instructional approaches implemented on students' mean scores as measured by the achievement test covering the English language modal verbs.

The paired t-test on SPSS was carried out to find out if there were any significant differences in the mean scores between the results of the pre-and post-test of modal verbs due to the methods of

instruction. Table 2 shows that the mean scores of the TDI group on the Pre-test, Post-test, and Delayed Post-test of the modal verbs were 14.97, 22.83, and 22.37, respectively. These figures show that the TDI resulted in an increase of 8.04 points on the Post-test, and of 7.04 points on the Delayed Post-test. However, students' scores decreased only 0.64 on the Delayed Post-test, a result that could indicate that TDI students' knowledge and ability to use modal verbs were not affected remarkably at the time.

Table 2 also shows that the mean scores of the CALL group on the Pre-test, Post-test, and Delayed Post-test of the modal verbs were 15.23, 35.03, and 34.40, respectively. These figures show that the participants who were exposed to the CALL to learn the modal verbs scored better marks on the Post-test and Delayed Post-test than those who attended the TDI.

Table 2
Descriptive Statistics for the Means and Standard Deviation for the Two Groups on Pre-Test, I Post-Test (Immediate Post-Test), & Delayed Post-Test (D Post-Test).

Group Statistics

	Teaching Method	N	Mean	Std. Deviation	Std. Error Mean
Scores on Pre-test	Teacher Directed Method	30	14.97	3.479	.635
	Computer-Assisted Language Learning	30	15.23	5.177	.945
Scores on I Post-test	Teacher Directed Method	30	22.83	6.864	1.253
	Computer-Assisted Language Learning	30	35.03	7.341	1.340
Scores on D Post-test	Teacher Directed Method	30	22.37	6.589	1.203
	Computer-Assisted Language Learning	30	34.40	7.938	1.449

Calculations of the participants' achievement show that the TDI group increased their mean scores by 8.04 points on the Immediate Post-test and 7.40 points on the Delayed Post-test. On the other hand, CALL group increased their mean scores by 19.80 points on the Immediate Post-test and 19.17 points on the Delayed Post-test. This means that results of the two groups witnessed an increase in the mean scores due to two methods of instruction implemented.

TDI Findings

Table 3 shows that there were statistically significant differences between the mean scores achieved on the Pre-test and the Immediate Post-test by the same participants of the TDI group, t =-9.881, $p < .05$. It is also clear that there were statistically significant differences between the mean scores achieved on the Pre-test and the Delayed Post-test, t =-9.769, $p < .05$. However, the difference in the mean scores between the Immediate Post-test and the Delayed Post-test was not statistically different, $t = 1.174$, $p = .250$, which means that the scores of the TDI group on the

Delayed Post-test did not witness a significant change as a result of attending the achievement test three weeks after the Immediate Post-test.

Table 3
Paired Samples Test of Mean scores on Pre-Test, Immediate Post-Test (I Post-Test), and Delayed Post-Test (D Post-Test) for the Teacher-Driven Instruction (TDI) Group.

					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Scores on Pre-test - Scores on Post-test	-7.867	4.361	.796	-9.495	-6.238	-9.881	29	.000
Pair 2	Scores on Pre-test - Scores on D Post-test	-7.400	4.149	.757	-8.949	-5.851	-9.769	29	.000
Pair 3	Scores on I Post-test - Scores on D Psottest	.467	2.177	.398	-.346	1.280	1.174	29	.250

CALL Findings

Results of the Paired Samples Test for the participants' scores who attended the CALL approach looked similar to those related to the TDI group. Table 4 indicates that the difference in the mean scores between the results of the participants on the Pre-test and the Immediate Post-test was statistically significant, t =-23.364, $p < .05$. The same is true for the difference in the mean scores of results on the Pre-test and the Delayed Post-test, as t =-21.904, $p < .05$. Conversely, the difference in the mean scores of students' results on the Immediate Post-test and the Delayed Post-test was not statistically significant, t = 1.658, p = .108. This means that the scores of the CALL group on the Delayed Post-test did not decrease significantly as a result of attending the achievement test three weeks after the immediate Post-test.

Table 4
Paired Samples Test of Mean Scores on Pre-Test, Immediate Post-Test, and Delayed Post-Test for the CALL Group.

		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	Scores on Pre-test - Scores on I Post-test	-19.800	4.642	.847	-21.533	-18.067	-23.364	29	.000
Pair 2	Scores on Pre-test - Scores on D Post-test	-19.167	4.793	.875	-20.956	-17.377	-21.904	29	.000
Pair 3	Scores on I Post-test - Scores on D Post-test	.633	2.092	.382	-.148	1.415	1.658	29	.108

Results of the Paired Samples Test revealed that both of the two approaches (TDI & CALL using *Hot Potatoes*) helped Saudi undergraduate students improve their learning of English modal verbs significantly. Reaching this result requires analyzing the data collected on the three tests using the *t*-test of independent samples to find out which of the two approaches of grammar instruction (TDI & CALL) led to significantly better achievement.

Independent Samples Test

The *t*-test of independent samples was conducted to reveal whether the differences in the mean scores of the two groups were statistically significant. It also compared between the mean scores of the participants in the TDI group vs. the CALL group on the Post-test and the Delayed Post-test (Table 5).

Test of homogeneity of the scores on the Pre-test indicated that students' knowledge and ability to use English modal verbs was not expected to affect their scores on the post-tests. Table 2 has shown that the mean scores of the TDI and CALL were 14.97 and 15.23, respectively. Similarly, the Leven's test of homogeneity (Table 5) indicated that there were no significant differences in their scores as they enrolled in the experiment t =-.234, p > .05, SD= 1.134. Therefore, any difference in performance between the two groups in the Immediate Post-test and the delayed Post-Test could not be attributed to previous knowledge related to modal verbs, but to the type of instruction to which the participants were exposed.

Table 5
T-Test for the Means Scores of the Two Independent 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
Scores on Pre-test	Equal variances assumed	2.177	.146	-.234	58	.816	-.267	1.139	-2.546	2.013
	Equal variances not assumed			-.234	50.752	.816	-.267	1.139	-2.553	2.020
Scores on I Post-test	Equal variances assumed	.006	.937	-6.649	58	.000	-12.200	1.835	-15.873	-8.527
	Equal variances not assumed			-6.649	57.739	.000	-12.200	1.835	-15.873	-8.527
Scores on D Post-test	Equal variances assumed	.716	.401	-6.389	58	.000	-12.033	1.883	-15.803	-8.263
	Equal variances not assumed			-6.389	56.098	.000	-12.033	1.883	-15.806	-8.261

For the Post-test results, analysis of data revealed that there were statistically significant differences in the means scores of the TDI and CALL groups, t =-6.649, $p < .05$. The performance of the CALL group outperformed that of the TDI group, as the mean scores of the CALL group were 35.03 and TDI group was only 22.83.

The same *t*-test of independent samples leads to similar results for the Delayed Post-test. Table 5 shows that there were significant differences in the mean scores of the TDI and the CALL groups, t =-6.649, $p < .05$. The performance of the CALL group was better than the performance of the TDI group. Their mean scores on the Delayed Post-test were 34.40 and 22.37, respectively (Table 2).

Discussion

Both of the instructional approaches of English language grammar (modal verbs) significantly helped Saudi undergraduate students to improve their performance on the immediate and delayed post-test. However, CALL approach caused substantially better learning of the grammar items targeted.

Findings of this study are consistent with those of other prior studies that revealed the significant efficacy of the CALL compared to the TDI approach. Al-Jarf (2005) and Manurung (2015) found that the implementation of Internet-based instructional materials significantly improved students' language skills. Similarly, Al-Mansour and Al-Shorman (2012) and Abu Naba'h et al. (2009) emphasized that the computerized method significantly increased students' gains in grammar learning and revealed similar results. The results indicated that the performance of the computerized approaches significantly outperformed as compared to the teacher directed approach.

However, findings of some other studies were inconsistent with the results of the present study. Outcomes of those studies revealed that there were no significant differences in language learning gains between to the two instructional approaches, although both of the computerized and the teacher directed procedures helped participants improve their language gains. Dewhurst et al. (2000) found in their study that language students did equally well due to their exposure to two instructional approaches. Similarly, Kilickaya (2007) found that there were no statistically significant differences in the students' listening, reading and grammar scores on the TOFEL test due to their exposure to CALL and TDI. The inconsistency of findings between the present study and that of Muir-Herzig (2004) has also been observed. Findings of Muri-Herzig's studyrevealed that there were no positive effects of using technology on the gains of the at-risk participants. One possible explanation for the effectiveness of the CALL approach in teaching grammar is that the participants exposed to this approach practiced learning the modal verbs outside the classroom. Another feature of digital learning that *Hot Potatoes* has is that it caters to individual differences. The software offers a chance to the users to work on the activities and exercises that meet their interest, competency level, and according to each's pace.

Another explanation of the results of this study is the design of the instructional material because the software made it easy for the researcher to build up the content according to students' needs and interests. Moreover, it also made the learning situation closer to real life situations. The use of multimedia-enabled the designer to expose the students of this study to learning situations with the language skills integrated into one exercise. For example, students were instructed to watch a movie of some young people talking about their picnic of last week. While listening and reading some texts appearing in the movie, the students needed to respond to the questions in writing to fill an information gap or to solve a problem. In this type of exercise as well as all other exercises, it was possible for the student to ask for hints or clues that made the exercise look challenging rather than threatening. The students enjoyed this learning as they were receiving immediate private feedback dependent on their responses, which is not possible for the teacher to do all situations in the traditional TDI. Students were also able to watch their performance progress because the software has the feature of keeping a record of individual's performance that is accessible at any time. It is also important to highlight that the presence of the teacher during the classroom time to help students, monitor their work, and contribute to the discussions when the need aroused. However, one possible explanation of having some previous research findings not favoring the CALL compared to the TDI approach could be attributed to the number and quality of the features of the software used to build up the instructional material.

Conclusion and Implications

The study has concluded that using computers in grammar instruction proved to be more efficient as compared to the traditional approach of TDI. However, implementing instructional applications in classrooms requires careful experimentation and evaluation of their efficiency before taking that decision. It is essential to investigate what reasons and features of the CALL approach from the participants' point of view that result in better gains in learning English grammar. A central implication of the present study is that the adoption of CALL can go a long way in solving the problems of students' deficiency in understanding and using English language grammar in the Saudi context. It is also important to recommend that academic institutions need to invest more in developing and updating computer applications with more useful tools and applications that serve the instructional purposes. Therefore, further research is required to investigate the issue from various aspects of CALL-supported language instruction. Replicating this type of research with more significant numbers of participants in more extended experimentation periods using different TDI methods may strengthen the validity of the results and so to generalize the findings.

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