

Approaches of the 21st Century: Improving EFL Learners' Grammatical Competence through Computer-Assisted Language Learning (CALL)

A Case Study of Third-Year LMD Students of English at Mohamed Kheider-University of Biskra-Algeria

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Abstract:

The mastery of the Grammatical Competence, i.e. linguistic competence is deemed to be the foundation for successful language learning. Apparently, the majority of EFL students have difficulties in grammar such as their miss-use of grammar structures. Accordingly, this paper aims at investigating the utility of integrating Computer-assisted Language Learning (CALL) in teaching grammar and its impacts in improving EFL learners' competencies in grammar. The instruction aimed at investigating learners' linguistic competence progress of the representative sample of Third-Year LMD students.

Therefore, a mixed research approach was adopted in this study. In relevance to this approach, four data gathering methods were used in order to investigate learners' perceptions of grammar structures and their reactions towards the applied instruction. These tools include a quasi-experiment, students' evaluation form, students' questionnaire, and teachers' interview. After the analysis and the interpretation of the collected data, the findings revealed that CALL instruction can help in improving EFL learners' linguistic competence, specifically their grammar.

Key words:

Computer-assisted Language Learning (CALL); grammatical competence; linguistic competence; grammar

1. INTRODUCTION:

Since the era in which we live has been known as the era of The Knowledge Society, the era of The Information Age or even the era of The Globalization, we constantly witness an enormous explosion of new types and styles of communication technologies such as computers including desktops and laptops, mobile phones, iPods and so on as well as media like the internet, text messaging, e-mails, chats and others. Moreover, the process of inventing new means of communication is in continuous progress. This revolutionary society which is formed as a global village is making people closer according to their different and specific needs thanks to the communication technologies. Thus, not just one language would be involved for the sake of communication but several languages. Furthermore, with the development of the artificial intelligence and the digital tools being bilingual or multilingual is a significant part of this information communication revolution. These technologies create an environment which contains a multiplicity of languages and have a great impact on the way we write, read, and process information of the target language in order to develop our knowledge about it.

Henceforward, English language has become the language of power and science. As an illustration, we can notice the great increase of the number of students whose first language is not English as well as the extent use of English on internet and social media. The Algerian government as a part of the world has given an essential status to English to be the foreign language taught in schools so that it has become a primary interest for learners and a matter of investigation for teachers to develop learners' autonomy and motivation as well as their linguistic competence. Thus, teachers face a unique challenge with teaching English language in the context of non-English classrooms which limit the learners from the original language and cultural input. Teachers will not risk rendering the classrooms to an artificial environment because of that they make efforts to use new methods to confirm better learning outcomes. The advances in the Information and Communication Technologies (ICT) tools and the multimedia have made precious additions to teachers' instruction materials. Regardless of the traditional ways of teaching and the old approaches, teachers adapt computational tools and approaches in order to facilitate the access to the mediated and the authentic sources to information that can be related to learning language activities.

Knowing about the language does not mean only the mastery of the productive and the receptive skills without the mastery of the linguistic competence which is the foundation of learning a language and the basis to master its linguistic aspects. Therefore, authentic experiences such as the direct use of computers motivate students to engage actively in the process of learning by developing their knowledge about the use of technology and developing their critical thinking. Hence, computers have become widespread at schools, business and homes; the need of mastering the language rules has become a necessity, teachers started to use such innovative technologies as pedagogical tools in second language teaching which is referred to The Computer-Assisted Language Learning. The CALL is related to the utilization of computers in English language learning. It does not simply include laptops devices, but it also concerns the internet connecting to them and a number of technological items which are referred to as The Web-Enhanced language learning (WELL) or The Web-Based language learning (WBLL).

In terms of theoretical approaches, communication technologies and computers, The Computer-Assisted Language (CALL) software programs present a great challenge for the teachers and the learners as a new mean of exploration in improving learners' linguistic competence. Therefore, the present work intends to investigate the role of CALL and its use in promoting EFL learners' linguistic competence.

1. What Is the Grammatical Competence?

According to Chomsky (1965) the linguistic competence or the grammatical competence the "speaker-hearer's knowledge of his language". Thus, Chomsky (1980) made another distinction of competence and he defined it as:

By 'grammatical competence' I mean the cognitive state that encompasses all those aspects of form and meaning and their relation, including underlying structures that enter into that relation, which are properly assigned to the specific system of the human mind that relates representations of form and meaning. (p.59)

Also, Linguistic Competence/Grammatical competence had been defined by Smith (2002) as it is concerned with the knowledge of language code of the target language, in other words how to combine the different elements of grammar following the semantic, syntactic, morphological, and phonological rules of language.

2. Definitions of Computer-Assisted Language Learning (CALL)

Over the last few years, CALL has received a considerable attention as research field and focus where various studies attempted to distinguish the limitations and the characteristics of research being enrolled in the field (Stokwell, 2007). Since 1960, CALL has experienced decades of developments. As a beginning, CALL was considered as a program which ran on 56 Mainframe computers in order to provide learners with drills and practice. Further developments in technologies have led to the evolvement of CALL where this latter can be seen in a more specific way and regarded as the software means designed to reinforce language learning. Generally, it has been defined in much broader senses (Egbert, 2005). Traditionally, CALL has been described as means of presenting, reinforcing, and testing specific items of language. Learners are first provided with rules and some examples, after that, they answer a series of questions that test their knowledge of the rules and the computers provide them with the appropriate feedback and a mark, which may be stored in order to be controlled and checked by the teacher later on (Gunduz, 2005).

Levy (1997) defined CALL as "the search for and study of applications of the computer in language teaching and learning" (p.01). Levy's definition was considered very general and it has been widely cited in other CALL researches. Specifically, Hanson-smith, Cao and Egbert (1999, p.1) identified the basis of CALL as "optimal, technology-enhanced language teaching and learning environment, that is, language and content settings in which technology was used as effectively as possible to support learning". Recently, Egbert (2005) pointed to CALL as "using computers to support language teaching and learning in some way" (p.3). In order to explain "some way", Egbert (2005, p.3) stated that it was a massive work including all the additions and changes which have happened to CALL, because "CALL has come to include so many different technologies: laptop computers, personal digital assistants (PDAs), digital audio recorders, modem and cable internet access, local area and networking, and more". All in all, Computer-assisted Language Learning (CALL) is an approach to language teaching and learning which requires the use of computers related to internet in order to reinforce language learning.

Some of the characteristics which can determine any CALL program according to Ward (2003) include:

- The nature of language to be taught,
- The determination of language instruction,
- The specification of the language writing system,
- The identification of the level of language to be taught,
- The choice of language content to be taught, and
- How is it to be taught.

CALL has been defined by many educators and scholars in terms of its usages and its various applications that foster language learning and describing its characteristics in terms of the content and how to be taught in the process of language learning.

3. Approaches to CALL and Second Language Acquisition (SLA)

Decades ago, Second Language Acquisition (SLA) theories principle concern was about the various aspects of interaction in the target language where the role of input, interaction and output have received major attention rather than the pragmatic, discourse and sociolinguistic components of the communicative competence (Kim & Rissel, 2008). Moreover, In Krashen's monitor model (1981) comprehensible input is the primary element responsible for developing the interlanguage system and the unique process of promoting language acquisition. Meanwhile many scholars and educators stressed that the significance of the processed input in supporting language learning, a major emphasis was given to the role of interaction and negotiation of meaning (Ellis, 1985; Gass, 1997; Hatch, 1978; Pica, 1994).

4.1 The Interactionist Theory

Chapelle (2003) indicated three types of basic interaction: interpersonal (between people), intrapersonal (within a person's mind), and the interaction that happen between a person and computer (learner-computer). Chapelle noticed that many computer users initiate the computer-learner interaction when they want to receive comprehension or seek dictionary help they just click on a hyperlink. She asserted that one of the advantages of computer-learner interaction is that the obtaining of comprehensible input. Chapelle (2003) noted that most of SAL researchers agreed upon the enhancement and the enrichment of the input is more beneficial in learning process rather than just simple modifications because learners are encountered materials used by the native-speakers of the language.

4.2 The Socio-cultural Theory

Levy Vygotsky, a psychologist and a social constructivist, developed a theory of The Zone of Proximal Development (ZPD) which stated the distinction between what a learner can do with assistance and what a learner can do without assistance. Vygotsky argued that a child imitates and follows adult's example in order to develop the ability to accomplish certain tasks without any kind of help. Vygotsky (1978) defined the ZPD as the interval between current development level of learners as it is specified through the independent problem solving and the level of potential level as specified through problem solving with help from adults (experts), or through cooperation with other peers (novices).

Chapelle (2009) indicated theoretical perspectives grouped in four major approaches in order to illustrate the connections between CALL and SAL:

- Cognitive Linguistic (the concept-oriented approach, autonomous induction theory, and Universal Grammar);
- Psycholinguistic (input processing theory, integrationist theory, process ability theory);
- Human learning (skill acquisition theory, associative-cognitive creed); and
- Language in social context (conversation analysis, sociocultural, language socialization, complexity theory, systemic-functional).

4.3 The Communicative Language Teaching

Krashen (1985) is one of the most passionate advocates of communicative language teaching. Much of his SLA theory studies were about first language acquisition and he emphasized the importance of the principal element in learning a new language which is the comprehensible input. That is to say, Krashen argued that learners cannot acquire the language without understanding the meaning in second language.

Krashen's (as cited in Nutta, 1996) Monitor Theory contains five hypotheses on how language is learned:

- The Affective Filter Hypothesis which is about that learner cannot learn the languages if their affective needs are not met.
- The Input Hypothesis which claims that the comprehensible input is the most crucial component in second language acquisition where the teacher must provide students with input higher than students' actual level of competence (i+1). The teacher can make the input comprehensible through repetition,

through gesturing or through the use of visuals and so on just like the way children acquire their first language.

- The Acquisition/Learning Hypothesis which is about that learners achieve fluency in learning through subconscious process when they are exposed to plentiful
- Comprehensible input and learning is conscious process which enables students to understand the language rules and apply them just when there is time to operate such as in writings and planned speeches.
- The Natural Order Hypothesis which is about the developmental sequence of language structures that are related to individual's process of language acquisition.
- The Monitor Hypothesis which claims that the learned structures are evaluated by a monitor that is located in the individual's brain when there is time for planned writings or speeches but it does not occur in spontaneous conversations.

Krashen's theory has been reviewed by many scholars, and one of the most arguments against his work is the lack of affirmations on interaction and output. Many researchers now emphasize the significance of negotiation of meaning and comprehensible input in classrooms (as cited in Nutta, 1996). Ellis (1985, p.161) has integrated contemporary theory on communicative language teaching includes two of the major aspects: input and interaction. He argued that the necessary features for a rapid SLA involvement are as follows:

- A high quantity of input directed at the learner;
- The learner's perceived need to communicate in the L2;
- Independent control of the propositional content by the learner, e.g., control over topic choice;
- Adherence to the "here and now" principle, at least initially;
- The performance of a range of speech acts by both native speaker/teacher and the learner;
- Exposure to high quantity of directives;
- Exposure to high quantity of extending utterances;
- Opportunities for uninhibited practice, which may allow for new opportunities to experiment using new forms.

In order to achieve communicative competence, teachers must expose learners to more authentic materials for constructing the appropriate meaning of the target language which enables them to advance in the process of learning the language, and the CALL provides a suitable range of original materials that teachers use to develop learners' communicative competence.

4. Related Researches to Computer-assisted Language Learning (CALL)

The application of technology in teaching and learning domains were the main focus in several researches and studies, including the remarkable developments in technology and CALL researches (Zaho, 2003). This section presents a number of researches and studies about CALL as follows:

Chapelle and Jamieson (1986) conducted a research about the effectiveness of computer-assisted language learning (CALL) in the acquisition of English as a second language. The study has been undertaken on students whose native language either Spanish or Arabic in an intensive program where the students' proficiency in English was measured by an oral test of communicative competence and TOEFL test. The results of the research revealed that there was no big difference on the criterion measured by the use of CALL and showed that some CALL materials was suitable for some types of learners more than others and it is requisite to take into consideration various learner variables when conducting a research about the effectiveness of CALL.

The field of Computer-mediated Communication (CMC) also has been considered as a powerful implementation of communicative, interactive and computer-based tasks which can yield to ample benefits for L2 learners. De la Fuente's (2003) research examined the various effects of computer-mediated interactions and face-to-face interactions in the process of acquiring L2 word meaning by Spanish learners. In order to assess task participation and assessment performance, oral and written, receptive and productive measures were used. Task-based and interactionist research has examined the effect of posed output production in the process of negotiation and the possible influence of negotiation of meaning on L2 vocabulary improvements.

Jamieson, Chapelle and Preiss (2004) declared that CALL evaluation might be ideally appropriate regarding second language acquisition principles. In their research, a subcategory of criteria was used to assess the design of English as second or foreign language (ESL/EFL) online courses, Longman English Online. The results

of the evaluation of the study showed that most of the criteria were suitable with the respect of some were better than others.

Godwin-Jones (2009) admitted that the use of computers to help students in practicing and learning grammar constructions is traced back to the earliest days of CALL. With the emergence of the Internet age, CALL began to shed lights more on the new potentials of computer-mediated communication where the awareness of grammar structures, forms and rules for adult learners is a necessary component of online learning. Therefore, a new recognition focuses on integrating grammar forms into communication-centered or networked language learning environment rather than just teaching grammar in isolated activity. Moreover, the older grammar exercises formats like fill in the blanks and multiple choices require to be applied in more innovative way with engaging interactions and with communicative goals where contextual, informative and corrective feedback should coexist with exercises. Also Godwin-Jones (2009) claimed that the anticipation today is that online programs will provide innovative, integrated and intelligent exercises where students will pay attention to grammar structures and forms.

Several studies have been conducted by many educators and researchers have proved the remarkable impact of CALL in influencing the Second Language Acquisition domain, specifically in improving EFL learners' grammar and vocabulary which lead to the amelioration of their linguistic competence through distinct ways which CALL materials can provide with evolvement of technology.

5. RESEARCH HYPOTHESES

H₁: If EFL teachers integrate Computer-assisted Language Learning (CALL) instruction in grammar teaching, learners' grammatical competence would be improved.

H₀: The integration of Computer-assisted Language Learning (CALL) Instruction in grammar teaching will not have a significant impact on improving EFL learners' grammatical competence.

7. METHODOLOGY

7.1 Rational for Research Approach

This study has been conducted through a mixed methodology because "this combination has a great potential for future research as it can bring out the best of both approaches while neutralizing the shortcomings and biases inherent in each paradigm" (Dornyei, 2003, pp. 130-131). First, a quasi-experimental research has been adapted in order to evaluate the effectiveness of the instructional program and to answer the first research question which stated "will the use of Computer-assisted Language Learning (CALL) programs for learning English language improve EFL learners' linguistic competence". Second, a students' questionnaire and students' evaluation form aimed at collecting both numerical and descriptive data in order to answer the second research question which stated "how do students perceive the benefits of CALL in assisting their linguistic/Grammatical competence, particularly their grammar". Third, a teachers' interview intended to gather teachers' attitude towards the instructional program and to answer the last research question of this research which stated "what would be the attitude of teachers and learners towards the use of CALL programs". As such, the current study quantitatively and qualitatively describes the data gathered by means of a quasi experiment, a students' evaluation form and a students' questionnaire, and a teachers' interview.

7.2 Sample and Population

The population of this study was Third-Year LMD students of English as a Foreign Language at Mohamed Kheider Biskra University of Biskra. Based on a simple random sampling technique, fifteen (15) EFL students have been chosen and volunteered to participate from the total number of four-hundred and fifty (450) EFL students. Having a sample from the overall population allows the researcher to make clear and appropriate generalization as it is asserted by Ross (2005, p.1 as cited in Meddour, 2014) "The information derived from the resulting sample is customarily employed to develop useful generalizations about the population". The experimental group consisted of eleven (11) females and four (04) males as participants which have studied grammar as official session for four semesters (i.e. two years). The reason behind the selection of this sample was simply that the linguistic competence is the foundation of mastering the target language, in addition to all their courses are built upon grammar constructions and rules.

7.3 The Description of the Quasi-experiment

As a matter of fact, the true experimental research design is considered as the standard for assessing and evaluating the usefulness of an instruction program and the improvements of students' performance, thus "quasi-experimental studies may be more feasible or appropriate" (Moore, 2008 as cited in Meddour, 2014). Henceforth, there are some common feature between true experiments and quasi-experiments, fundamentally to find out the relationship between variables which results from a particular treatment or manipulation.

According to Cohen, Manion & Morison, (2007, p, 257 as cited in Meddour, 2014), the quasi-experimental studies may take different designs like,

- The one group pretest-posttest design,
- The non-equivalent control group design,
- The time series design.

Moreover, according to Moore, (2008 as cited in Meddour, 2014) all the above designs can provide helpful discussions of cause and effect relationship between the variables of the study.

Practically, the current study with the whole one-group pretest-posttest design has been conducted in five weeks, two sessions per week with an hour and a half for each session where two sessions have been postponed for some administrative issues.

The one-group pretest-posttest design sessions have been administratively divided as follows: a session for the pretest, eight sessions for the treatment level, and a session for the posttest. During the treatment level, the one-group study participants used computers in the Multimedia Laboratory at the Faculty of Letters and Languages. There are 20 computers in the laboratory where each computer runs on the version of Microsoft Windows 7 Professional. Each student had his/her own computer to work on the English Grammar Secrets Online Program.

7.3.1 Experimental Program Description

To attain the impact of Computer-assisted Language Learning (CALL) on the performance of the participants, the researcher selected the English Grammar Secrets online program because the content format and grammar presented in the software are identical to the courses' content which have been taught previously to the participants. The English Grammar Secrets program actually is Pearson Brown and Caroline Brown's (2010) book presented in an online software format and a PDF format. Therefore, The software combines instruction and practice in one program, it

has some noteworthy features such as: animated grammar presentation, like moving squares and rectangles during practicing the exercises, the extensive grammar practice which provide multiple exercises including the dynamic practice as fill in the gaps through listening, the illustration and guidance of how grammar exercises work by providing an animated sample, and the ongoing evaluation which provides and immediate feedback through practicing exercises which allows the participants to monitor their own progress. The English Grammar Secrets online courseware took the advantage of everything multimedia has to offer including words, animations and movements, sound, colors and interactivity.

Moreover, The English Grammar Secrets online courseware uses the deductive model by dividing the English language into various teachable units or grammar categories such as tenses (i.e. past simple or present simple), the imperative form and the passive form, conditional and so on. The software presents the course in the form of rules and some examples first, then it provides practice exercising in accordance to the explanations of grammar point.

7.3.2 Analysis and Interpretation of the Scores

7.3.2.1 Statistical Consideration

In order to attain the difference between the pretest and posttest results statistically, we need to compute the mean, the variance, and the standard deviation. However, we decided to calculate the standard deviation using the frequency distribution of scores.

- **The Mean:** it is symbolized in writing as \bar{X} , which represents the average of scores.

The formula of mean is as follows:

$$\bar{X} = \frac{\sum Fx}{N}$$

\bar{X} : Mean

F_x : Score Frequency

N: Number of scores

Σ : The sum

- **The Standard Deviation (SD):** is used to calculate to what extent a set of scores varies in relation to the mean. The formula of SD is as follows:

1-

$$SD = \sqrt{\frac{\sum x^2 - \overline{X}^2}{N}}$$

The calculation of the Mean and Standard Deviation (SD) of the pretest is presented in table below:

Mean	Standard Deviation
$\overline{X} = \frac{\sum Fx}{N} = \frac{152.5}{15} = 10.17$	$SD_{pre} = \sqrt{\frac{\sum x^2 - \overline{X}^2}{N}} = \sqrt{\frac{2935.25 - 103.42}{15}}$
$\overline{X}_{pre} = 10.17$	$= \sqrt{188.78}$
	$SD_{pre} = 13.73$

Table 1. The Frequency of Scores, the Mean, and the Standard Deviation of the Pretest Scores

The Table 2 below demonstrates the score frequency, the Mean, the Standard Deviation of the posttest scores:

Mean	Standard Deviation
$\overline{X} = \frac{\sum Fx}{N} = \frac{191}{15} = 12.73$	$SD_{post} = \sqrt{\frac{\sum x^2 - \overline{X}^2}{N}} = \sqrt{\frac{4514.25 - 162.05}{15}}$
$\overline{X}_{post} = 12.73$	$= \sqrt{290.14}$
	$SD_{post} = 17.03$

Table 2. The Frequency of Scores, the Mean, and the Standard Deviation of the Posttest Scores

Comparison between two tests descriptive statistics demonstrates the difference between pretest and posttest Mean and Standard Deviation as it is shown in the table below:

Descriptive statistics	Pretest	Posttest	The difference
Mean	10.17	12.73	2.56
Standard Deviation	13.73	17.03	3.30

Table 3. Comparison of the Pretest and Posttest's Mean and Standard Deviation

According to the results displayed in the table 3, the Computer-assisted Language Learning (CALL) instruction, which participants have gone through the experimental treatment, has slightly increased the participants' scores in the posttest. Otherwise, the difference between the Mean and the Standard Deviation are not highly noticeable to the extent to claim that the instruction has greatly improved students' performance. However, the instruction has left great impact on participants' better scoring which is expressed in the remarkable progress of the majority of the participants. Therefore, in order to confirm this slight difference statistically, one needs to obtain extra descriptive statistics for better consolidation of the results which is the calculation the T-test.

7.3.2.2 T-test Calculation

According to Cohen, Manion, and Morrison (2007, p.543, as cited in Meddour, 2014), in order to calculate the t value, the following formula needs to be used:

$$t = \frac{\text{sample (or test)one mean} - \text{sample (or test)two mean}}{\text{Standard Error of the difference in means (SE)}}$$

To calculate the Standard Error (SE), the following formula needs to be applied:

$$SE = \frac{SD}{\sqrt{N}}$$

SD: Standard Deviation

N: The number of the sample, which is N=15

Also, we need to consider these statistics:

$$\bar{X}_{pre} = 10.17$$

$$\bar{X}_{post} = 12.73$$

$$SD_{pre} = 13.73$$

$$SD_{post} = 17.03$$

So,

$$SE = \frac{SD}{\sqrt{N}} = \frac{17.03 - 13.73}{\sqrt{15}} = \frac{3.3}{3.87} = 0.85$$

$$SE = 0.85$$

Standard Error of the difference in means is **0.85**

With applying the above t-test formula, we obtain the following:

$$t - \text{test} = \frac{\bar{X}_{post} - \bar{X}_{pre}}{SE} = \frac{12.73 - 10.17}{0.85} = \frac{2.56}{0.85} = 3.01$$

$$t = 3.01$$

- **Degree of Freedom**

According to Brown (1995, p.167 as cited in Meddour, 2014), "the degree of freedom (df) for the t-test of independent means is the first sample size minus one plus the second sample size minus one". It helps to find the critical value for "t".

$$df = (N_1 - 1) + (N_2 - 2)$$

$$= (15 - 1) + (15 - 1)$$

$$df = 28$$

- **Alpha Decision Level**

"The language researcher should once again set the alpha decision level in advance. The level may be at $\alpha < .05$ or at the more conservative $\alpha < .01$, if the decisions must be more sure" (Brown, 1995, p.159 cited in Meddour, 2014).

In the current pretest and posttest studies, we decided to set alpha at $\alpha < .05$, which means only 05% chance of error can be tolerated. The test is directional (tailed) because there is a sound logic and a theoretical reason to expect one mean to be higher than the other (CALL instructional treatment). Therefore, one tailed test predicts that the group will score more highly in the posttest than the pretest; consequently, it is chosen because "it is stronger than the two tailed test as it makes assumptions about the population and the direction of the outcome" (Cohen, Manion, and Morrison, 2007, p.504, cited in Meddour, 2014).

- **Critical Value**

Since alpha is set at $\alpha < .05$ for one tailed decision, $df = 28$ and the corresponding critical value for "t", in Fisher and Yates' Table of critical value, is **1.67**, then we obtain:

$$t_{\text{obs}} > t_{\text{crit}} (3.01 > 1.67)$$

• Hypothesis Testing

Now, all the necessary information for testing our hypothesis have been collected in table 4:

Hypotheses Testing: $H_0 : \bar{X}_{\text{post}} = \bar{X}_{\text{pre}}$

$H_1 : \bar{X}_{\text{post}} > \bar{X}_{\text{pre}}$

The null hypothesis H_0 means that there is no statistically significant difference between the means of the group in the pretest and posttest. Meanwhile, the alternative hypothesis H_1 suggests that there is statistically significant difference between the means in the pretest and posttest.

Alpha level: $\alpha < .05$, one tailed (directional) decision.

Observed statistics: $t_{\text{obs}} = 3.01$

Critical statistics: $t_{\text{crit}} = 1.67$

Degree of freedom: $df = 28$

Table 4. Hypothesis Testing Rule

7.3.2.3 Statistical Significance and the Size Effect of the Tests

Since the observed statistics is higher than the critical value ($3.01 > 1.67$), the null hypothesis H_0 is not supported at $P < .05$. Automatically, having rejected the null hypothesis then the alternative hypothesis is accepted. This means that there is only 05% probability that observed mean difference: $\bar{X}_{\text{post}} > \bar{X}_{\text{pre}}$ ($12.73 > 10.17$) appeared by chance, or a 95% probability that was because of other factors than chance factors. The null hypothesis is rejected which means that we are 95% sure that the relationship between the dependent variable "D" (the posttest scores) and the independent variable "ID" (the CALL instructional treatment) did not occur by chance. Hence, we are in the position to support the alternative hypothesis H_1 which claims that students' better output and grammar improvement is affected by the instructional input (the CALL and online treatment).

The statistical significance of the tests results is proved; therefore, the researcher needs to attain what is called "the effect size" of the treatment. The effect size (Eta squared) is calculated by the following formula:

$$\text{Eta Squared} = \frac{t^2}{t^2 + (N1-1)} = \frac{9.06}{9.06+14} = \frac{9.06}{23.06} = 0.39$$

The corresponding effect of this value (0.39) from Cohen guidance (1988) shows that there is a very large effect of the input (X) on the output (Y), in which the input is the Computer-assisted Language learning (CALL) instructional treatment and the output is students' scores in the posttest. Therefore, the effect sizes statistically reveals the considerable difference between the scores of the pretest and the posttest which is due to the exposure to an instructional program to find out the impact of integrating Computer-assisted Language Learning (CALL) instruction in improving EFL students' performance in linguistic/grammatical competence.

All in all, the participants had been exposed to online software during the period of the CALL instructional treatment in order to confirm the effect of such treatment on EFL learners' linguistic competence. The remarkable progress of the participants in the posttest has statistically proved the powerful benefits of Computer-assisted Language Learning in improving EFL learners' linguistic competence. Therefore, the null hypothesis is rejected at alpha level $P > .05$ which indicated that the output of the treatment were purely the result of the treatment rather than the chance of other factors, which in turn has been confirmed with the computation of the size effect. Confirming the alternative hypothesis supports the substantial claim that the Computer-assisted Language Learning (CALL) instruction as an innovative teaching media in improving EFL learners' linguistic/grammatical competence.

7.4 Students' Evaluation of the Instruction Effectiveness

7.4.1 Rational and Aim

Students' evaluation form is another data collection method used in the present study in order to confirm the worth of the actual instructional program. Students' evaluation form is "related to decisions about the quality of the program itself and decisions about individuals in the program"(Richard & Schmidt, 2002, p.188 as cited in Meddour, 2014). Therefore, in what concerns our study, the students' evaluation forms have been distributed to the participants at the last session after having the treatment, i.e. at the eighth session. The students' evaluation form aimed at identifying the participants' views and perceptions towards the presented instruction, as well as the materials and the activities. The substantial aim of the evaluation form was to provide teachers with worthy reflections and useful insights to make relevant changes and improvements in teaching practices.

7.5 Students' Questionnaire

7.5.1 Rational and Aim

Students' questionnaire has been chosen as a data collection tool due to the fact that questionnaires "are extremely versatile and uniquely capable of gathering a large amount of information quickly in a form that is readily processable" (Dornyei, 2003, p.1). This data collection method was used as a supplementary tool to gather more detailed information about the participants' perceptions on the impact of CALL in improving EFL learner's linguistic competence, namely grammar. As far as students were restricted with certain statements in the evaluation forms, the questionnaires provided the participants with the opportunity to express freely their own opinions and perceptions.

7.6 Teachers' Interview

7.6.1 The Sample

The interview was administered to six (06) teachers who teach modules that have a relationship with grammar learning such as Written Expression, Oral Expression, Grammar, Mastery of the Language, and Linguistics as it deals with studying the systems of the language. Also the selection of the sample was based on the consideration that some of the teachers use technology and language laboratories in teaching process. Thus, the chosen teachers of such modules has being seen as the best representatives of the extent to which computer technologies are included within the course to teach and assist students to learn grammar correctly. However, one of the teachers did not render back the copy of the interview because s/he could not

answer the rest of the questions. So, the results of the interview are based on (05) teachers who represent our sample.

8. RESULTS AND FINDINGS

To review, the objective of the current study was to investigate the effectiveness of Computer-assisted Language Learning (CALL) instruction in improving EFL learners' Grammatical Competence. Hence, it aimed at helping learners to enhance their grammatical competence in terms of producing accurate and correct sentences. Simultaneously, the study sought to promote learners' autonomy and interaction through exposing them to authentic material that enable them to develop their grammar. Also, the study pursued raising students' attention to their grammatical mistakes through the immediate corrective feedback that CALL provides. Furthermore, the study intended to support the adaptation of technology mainly computers as new and creative way in teaching practices to improve learners' linguistic competence.

Indeed, the findings revealed a considerable impact in developing learners' linguistic competence through CALL, and it revealed interesting insights into the use of computer technologies by students and teachers. The findings of this study which have been drawn from the analysis of the four data gathering methods were positive in many aspects. Initially, the quasi-experimental study portrayed the substantial difference between learners' pretest and posttest scores. A noticeable progress was observed and statistically confirmed in learners' posttest scores which proves the benefits of CALL instruction in enhancing EFL learners' linguistic competence, namely their grammar. The null hypothesis is rejected at an alpha level $P > .05$ which indicates that the output of the treatment was purely the results of the treatment rather than any extra factors which has been affirmed through the calculation of size effect. Since the alternative hypothesis was confirmed, we can conclude with the considerable impacts of Computer-assisted Language Learning (CALL) as an innovative instruction in improving EFL learners' linguistic competence.

Regarding students' evaluation forms, the findings revealed that the majority of the students expressed their agreements concerning the different materials provided by CALL. Over half of the students preferred CALL as an instruction by rating their agreements on the usefulness, the suitability, and the relevance of the information that CALL materials deliver.

Hence, most of the participants expressed their positive agreement about that CALL materials promote student-centered learning strategies and autonomy, and they allow

for better scoring and achievements. Henceforth, concerning CALL lessons and activities, it was agreed that CALL activities are appropriate to their learning objectives and they offer a great assistance in improving their linguistic competence which includes grammar and vocabulary. In addition to evaluating CALL in terms of motivation and interest, the findings revealed that the majority of the participants found CALL materials and online activities and lessons quite motivating, interesting, organized, and enjoyable for practicing grammar.

In this respect, it is worthy to notice the extent to which students preferred CALL instruction rather than the traditional way of teaching. This demonstrates the high positive attitude of EFL students towards the use of CALL in developing their linguistic competence. Therefore, the students confessed the importance of the authenticity that CALL materials allow for raising their motivation and interest in order to understand efficiently the content of courses and to improve their grammatical competence.

In addition to students' questionnaire, the findings revealed that the mobile devices are widespread among EFL learners, and every student have at least one computer device. This proves the omnipresence and the availability of computer devices as two main features to exploit. The majority of students use their computer devices for 3 hours or more which denotes the addiction of the students towards the attractive activities that computer devices afford, and it elucidates the manipulation of the input and interaction between computer devices and the learners. Hence, the findings revealed that all the participants know how to use the Internet wherein it is seen as the most targeted spot more than the other computer software because of its various and beneficial websites. Also, the findings revealed that most of the participants evaluated computer devices in terms of affordance wherein the anytime-anywhere benefit identified as the main feature of computer devices, and the technical challenges and the need to be skillful about the use of computers identified as the main challenges. Reliability issues and educational problems were the main disadvantages that may reduce the use of CALL.

Moreover, the findings revealed that the majority of students use their computer devices and access to the Internet whenever and wherever they find the opportunity which confirms the anytime-anywhere benefit. Likewise, the results indicated that EFL learners often use their computer devices and online packages for English learning; however, it not surprising that students spend most of their time on entertainment activities such as songs and games and on social networking, i.e. they

do not prioritize English learning as a computer activity. Thus, EFL students use web-based packages informally maybe because they find the freedom to choose the kind of activities that fit and satisfy their needs more than to be conditioned in formal setting like school. One can conclude with that EFL students use their computer devices and Internet packages in a spontaneous and irregular way; so that, they take the anytime-anywhere benefit for granted to fulfill their times. These findings broadly match the approaches stated in the chapter two, i.e. the interactionist theory, the sociocultural theory, the communicative approach, and cognitive and social processes theory.

Along with the same vein, this study revealed that vocabulary and grammar are at the top of language aspects that EFL learners intend to improve. Thus, the majority of the students reported their dependence of online courses and test messaging in improving their grammatical competence. Additionally, the findings revealed students motivation and interest when using CALL activities to learn grammar. Hence, Form their own CALL experience, students reported that CALL activities improved and raised their grammatical competence. To conclude, the study denotes that CALL activities offer various opportunities for effective grammar learning. In fact, EFL learners learn grammar implicitly more than explicitly.

Finally, the teachers' interview analysis provided with positive comments and valuable feedback towards the use of CALL as an instruction to teach grammar. The findings revealed that EFL teachers were aware about the use of the different technological materials inside and outside the classroom and their implementation in the process of teaching. Therefore, EFL teachers expressed their massive use of the computer devices especially laptops in preparing the different materials that meet the courses requirements. Also, teachers admitted their wide reliability on the Internet and the various websites in illustrating real-life situations and exposing learners to authenticity. It is worth noting that EFL teachers reported the extreme significance of teaching and learning the linguistic competence as it is the foundation of mastering a language as well as it is the basic aspect of well delivery of communication. Hence, it was agreed that CALL activities are effective in improving EFL learners' linguistic competence, especially grammar. Although, EFL teachers are not completely conscious about the affordance of CALL activities, they have agreed that CALL is an efficient instruction to in developing EFL learners' English language, specifically their grammar. The EFL teachers expressed their positive attitude and high agreements towards the use of CALL materials in teaching grammar.

To conclude the discussion, the study findings revealed that CALL grammar activities penetrate both teachers' teaching style and learners' process of learning. Therefore, the study proved that CALL is an effective instruction to be adapted in teaching and improving learners' grammatical competence. This provides answers to the previous research questions and confirms the research hypotheses.

9. CONCLUSION

The present paper has mainly investigated the effectiveness of CALL as a new educational tool with unlimited advantages in improving EFL learners' linguistic/grammatical competence. This emerging wave of technological tools has been confirmed to be an aid to assist EFL students' competencies and language skills, particularly their grammar learning.

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