

## **Computer-assisted instruction: 'JClic' as a new pedagogical tool for EFL learners**

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### **ABSTRACT**

The present study has a double purpose: firstly, to evaluate the effect of JClic on students' performance in the use of Simple Present Perfect in English and secondly, to establish the impact of the use of JClic on students' engagement and motivation. In other words, this research seeks to find out if student engagement and motivation in the learning process are heightened while using JClic, as a pedagogical tool, to carry out instruction. In this study, the Simple Present Perfect is presented in contrast to Simple Past in order to strengthen students' knowledge and understanding of the two tenses, although only the first one is evaluated as it was more problematic for them (according to the results from the 2<sup>nd</sup> end of term exam). Furthermore, a description and practice activities, involving the use of both tenses, are presented.

In this study, we use mixed methods (quantitative and qualitative), in order to answer the research questions and obtain a better triangulation and complementarity regarding data collection. The findings reveal that the use of the JClic software, as a computer-assisted language-learning (CALL) tool, can increase students' engagement, motivation, and learning achievement. Thus, computer-assisted instruction (CAI) might complement teacher-directed instruction through motivating activities that are helpful to students so as to improve their academic performance. Finally, the results of this study may be useful for English teachers as they can use students' achievement data in order to make instructional decisions to change classroom environment and improve learning.

**Keywords:** JClic, motivation, Simple Present Perfect, Simple Past, Computer-Assisted Language Learning (CALL), Computer-Assisted Instruction (CAI).

### **INTRODUCTION**

Nowadays, it is beyond question that the study of languages is the backbone of socio-cultural progress at any academic level, but especially for high school learners. Throughout the educational period, students are provided with (1) training; (2) intellectual maturity; and (3) skills to develop social functions, use information and communication technologies properly, use at least one modern foreign language (FL) appropriately, and join working life responsibly and competently. In addition, the main aim of teaching a FL in bachelor's degree programme is for students to broaden their ability to analyse texts, produce complex ideas, make clear arguments, plan research and learn how to answer questions or solve problems related to topics of interest. Therefore, at this stage, the study of a FL becomes compulsory.

English language is one of the most widely spoken languages in the world and the main means of international communication on the Internet, science, and academic instruction. Moreover, in present-day scholarly and technological environment, it has become crucial to possess good communication skills. In addition, English language enables students to access higher education, and therefore has become a necessary prerequisite to study at university. Besides, getting access to academic and scientific information and using the new technologies to find a job or to communicate with people all over the world becomes paramount. In other words, English is

therefore considered the language of academic instruction and of international communication. For that reason, it is vital to look at it as a *lingua franca* in business, science and education.

Even though there have been many studies on the effect and methods of teaching grammar through computer-assisted instruction (CAI), only a few research studies have investigated the effectiveness of learning specific grammatical structures in English as a Foreign Language (EFL) classrooms, through multimedia grammar activities created with a free open source software (FOSS) tool.

Thus, the immediate purpose of the present study is to demonstrate the effectiveness of JClic on student engagement and motivation through learner-centred instruction. Furthermore, the practice is performed with the help of fifteen interactive multimedia activities designed with JClic. In this manner, we adapt the teaching method to students' communicative needs by providing them the adequate material.

## **THEORETICAL REVIEW**

### **From Teacher-Based towards Learner-Centred Instruction**

Teacher-directed instruction is classroom-based and includes direct instructions controlled by the teacher, who carries out most of the talking and therefore students are expected to listen and learn from what the teacher explains. In this type of instruction, the passive role of learners is identified as having the following characteristics (Sánchez, 1997, p.215, cited in Girón-García, 2013, pp.49-50):

- Priority is not given to students' communicative needs. As a consequence, the teacher becomes the 'star of the show' and is an external factor to the learner.
- Teachers are seldom flexible in the organization of the learning process, the contents to be learned, or the strategies that learners need to learn. As a result, they do not promote any responsibility on behalf of the learners.
- Learners' feelings, their affective context and their social or participative relationships are only scantily taken into account.
- Teachers do not pay attention to learners' social or participative fellowship.

Regarding assessment, the teacher uses traditional tools and the tests are mainly taken from textbooks or other teaching resources. Besides, students do not have too many opportunities to interact with their classmates as most classes involve long presentations, rote memorisation, question-and-answer practice, substitution drills and dictations. This means that students do not really use language for active communication for several reasons (Cuban, 1993, p.7):

- Teacher lectures exceed student talk during instruction.
- Instruction frequently occurs with the whole class; small-group or individual instruction rarely occurs.
- The teacher largely determines use of class time.
- Teachers rely heavily upon the textbook to guide curricular and instructional decision-making.
- The classroom furniture is usually arranged into rows of desks or chairs facing a chalkboard with a teacher's desk nearby.

In contrast, over the last three decades there has been a gradual move towards an emphasis on the learner. This shift in emphasis on the individual learner has been accompanied by

considerable changes in classroom practice. Accordingly, following Sánchez (1997) and Girón-García (2013, p.50), teachers need to:

- Adapt the learning method to learners, taking into account their communicative needs and providing them with materials that help them meet those needs.
- Understand that the teacher's role is not the main focus in the classroom. The teacher is free to decide on the most suitable content, methodology and techniques for each learning situation, which is always negotiated according to learners' needs.
- Favour learners' freedom to learn by taking into account their interests and learning styles.

Therefore, in order to give students the necessary support and reinforcement to accomplish the academic standards required, teachers generally use this type of instruction (i.e. learner-based or learner-centred). It is clear that this approach provides important elements to the teaching-learning process as students remain occupied and focused while achieving the necessary learning outcomes.

### **Learning Grammar through Computer-Based Instruction**

In the last decade, research has shown that there is also a great connection between grammar and computer-assisted language learning (CALL) and it has been demonstrated that the latter has a positive effect on students and improves their linguistic competence. Ehsani & Knodt (1998, p.54) state that "computer-aided language learning (CALL) has emerged as a tempting alternative to traditional modes of supplementing or replacing direct student-teacher interaction". Moreover, according to Beatty (2003, p.7), CALL can be defined as "any process in which a learner uses a computer and, as a result, improves his or her language".

On the other hand, Krashen (1985, p.80) states that first or second language acquisition occurs "by understanding messages, or by receiving comprehensible input" in a tensionless and highly motivational environment. In line with that, Long (1983), describes 'comprehensible input' as the target language that the learner can understand but is not able to produce, mainly because it is not part of his/her communicative routine. Furthermore, Nutta (1998, p.50) explains that "computer-based instruction offers many potential benefits as it transfers rich input in the form of integrated multimedia programs [...] to provide explicit grammar explanations that can be viewed and reviewed at the learner's own pace". Therefore, the computer can be considered a useful, interactive teaching aid, targeted on language learning, which can provide learners, among other things, comprehensible input by means of grammar exercises delivered in a motivating way.

### **Computer-Based Instruction: CALL, CAI and Grammar Instruction**

Among the most relevant beneficial features in using CALL, we may highlight the following (Ariew & Frommer, 1987, pp.177-178):

- Interaction: the student transmits a message and receives one in return.
- Immediate feedback: there is immediate notification that a mistake has been made.
- Error analysis: specific errors are identified and explained.
- Self-correction: clear error messages help most students to achieve the satisfaction of reaching the correct answer in the end.
- Reinforcement: students are encouraged by congratulatory messages for correct answers.

On the other hand, Ross, Morrison & Lowther (2010, pp.19-20) state that technology can be regarded as a 'tutor' and as a 'teaching aid'. Also, Stasinakis & Kalogiannakis (2015) emphasize

that information and communication technology (ICT) should be used for educational purposes as a process of modernisation of the teaching methods. Then, modern CAI can be defined as an instructional method that can be used on-line or offline to facilitate and enhance the learning process. In addition, this method of instruction and training is a type of educational technology that is focused on forms and mainly influenced by distinct behaviourist theories. CAI is used in schools as a method to improve instruction, to complement traditional teaching and to monitor students' learning outcomes. Further, Edwards, Norton, Taylor, Weiss, & Dusseldorp (1975, p.147) point out that "CAI is commonly provided to students in addition to normal classroom instruction [...]; when that is the case all studies have shown normal instruction supplemented by CAI to be more effective than normal instruction alone".

On top of that, computer programmes are interactive and information can be presented as text or as multimedia in the form of videos, attractive animation and music. Applications that are mainly controlled by the teacher or programme designer can include tutorials, simulations, problem-solving activities, association games, memory games, matching games, crosswords, listening quizzes, riddles, guided drills or multiple-choice questions that can give students the possibility to practise vocabulary or grammatical structures and be assessed at the same time.

Furthermore, the most important aspect of computer-based education is the relationship and interaction between students and the digital medium (Chapelle & Jamieson, 1983). As far as students are concerned, this type of interaction is one of the best ways to obtain enhanced input. As such, the pedagogical aim of CAI is to determine the circumstances under which linguistic interaction and language acquisition take place. For that reason, we can affirm that CAI can harmonize well with traditional teacher-directed instruction to foster students' motivation and engagement in the FL classroom.

### **JCLIC as a Pedagogical Tool**

As research has shown, interaction in a digital environment is very important for input enhancement (Gascoigne 2006; Khoii & Tabrizi, 2011). However, in order to engage and participate in the interactions offered by multimedia activities, students need to be sufficiently interested and motivated. The computer activities in this project were designed using JClic, a programme developed in the Java platform. This is a compelling tool that enables teachers who are non-programmers to create motivating educational tasks and activities for students of all ages. JClic was developed in Spain and its expansion started in 1992. This programme is totally free and it functions in Linux, Windows and Mac. Guerrero, Muñoz & Sotelino (2007, p.172) explain that JClic is being used "to create or to change easily the activities for our students, whatever the level or the needs may have". On the other hand, Guerrero et al. (2007, p.172) describe some of the main advantages of JClic, such as:

- Online and offline application.
- Integration of all multimedia components (video, picture, animation).
- Encouragement of students' motivation through 16 types of exercises.
- Integration of all media files in a "zip" file.
- Limitation on time and number of tries.
- Info boxes with information about the activity: time spent, success, etc.
- Performance report for teachers.

JClic activities can be created under the Creative Commons licence, which means that "the project can be modified or changed by another person providing that the authorship of the same one is respected" (Guerrero et al., 2007, p.176). Furthermore, the JClic programme is made up of three sections (Guerrero et al., 2007, pp.173-174):

- 'JClic Player': It allows the activities to be played from the local disk (or from the local network) without the necessity of being connected to the internet.
- 'JClic Author': It allows the creation, edition and publication of activities in a simpler, more visual and intuitive way.
- 'JClic Report': It collects data and generates reports on the results of the activities done by the students.

Therefore, the use of the JClic programme as part of CAI can provide different and new options for input improvement and in some cases even more benefits in comparison to traditional instruction. For instance, a study conducted by Morales & Ferreira (2008) using JClic for EFL learners can be a good reference point for this study, to emphasise its effectiveness in pedagogical practices. Their study determined that ongoing practice in language learning strategies that encourage student autonomy through digital education tools (e.g. JClic, Hot Potatoes, blogs, social networks, etc.) could be valuable in promoting students' language production skills. Likewise, Salinas, Ferreira & Ríos (2012) declare that the use of educational technology has become essential for effective language learning and training.

Nevertheless, as Girón-García (2015, p.78) points out, "it is not simply a question of the tool being used. It is necessary to also consider how these tools are used (pedagogical design)." For that reason, in the present research we assumed that the fun, interactive activities created with JClic could engage and motivate students to learn better and use more appropriately the Simple Present Perfect and the Simple Past tenses.

### **Motivation and Engagement**

Engagement and Motivation are essential factors in language learning as they can help increase students' participation in learning. According to Gardner (1985, p.10), '**Motivation**' to learn a second language can be perceived as "the combination of effort plus desire to achieve the goal of learning the language, plus favourable attitudes toward learning the language". In other words, students who are highly motivated employ a lot of effort to achieve their goals while students who employ only effort are not necessarily motivated. On the other hand, the Instituto Cervantes (2003-2006) describes motivation as the amount of reasoning responsible for a person's desire to learn a new language. In line with that, Lorenzo Bergillos (2004) suggests that motivation, as to what concerns language learning, is closely connected with mental processes and behaviour, and facilitates the interpretation of actions, intentions and desires.

Many researchers (Keller, 1983; Zimmerman, Bandura & Martinez-Pons, 1992; Dörnyei, 2001, 2005, 2007; Pajares & Valiante, 2006; Pintrich & Zusho 2007; Zimmerman & Schunk, 2011) have demonstrated that motivation can be influenced by several factors such as students' goals, interests, and sense of self-concept (i.e. convictions about the ability to accomplish goals) and self-efficacy for learning (i.e. convictions about the potential to reach certain levels of performance). These factors merge to generate two sources of motivation: students' projection of success and the value that students set on a goal. Also, self-efficacy principles determine how students behave, think, feel and motivate themselves.

Another point worth mentioning is the important role of multimedia materials in motivating English as Foreign/Second Language (EFL/ESL) students. According to Girón-García (2013, p.157) "many teachers have discovered that media materials can be valuable in a variety of instructional tasks, helping to make complex subject matter accessible and engaging". Nonetheless, many students feel engaged towards the originality of interactive multimedia at first and in order to maintain the engagement towards the activities, the elements of the design must continue to be motivational (Keller & Suzuki, 2004).

In relation to the above, another important determinant of successful learning is '**Engagement**'. In education, engagement refers to the level of interest, attention, confidence and curiosity that students show when they are learning or when they receive instruction. In other words, engagement is a motivational behaviour that reflects the level of motivation that students have for learning and knowledge improvement. Therefore, engagement is a versatile construct that includes various elements that mix and interact with each other to function at specific levels and reveal students' learning behaviour.

Actually, Fredricks, Blumenfeld, Friedel & Paris (2004, p.305) support this view and describe school engagement as "a multi-dimensional construct of motivation that includes three interrelated components: behavioural, emotional and cognitive". This implies that the three elements should be taken into account when measuring students' engagement level. Further, Fredricks et al. (2004, p.306) explain that "behavioural engagement involves doing work and following the rules; emotional engagement incorporates interest, value, and emotions; and cognitive engagement includes motivation, effort and strategy use". Thus, the three forms of engagement (behavioural, emotional and cognitive) are important in determining the degree of motivation a student has towards task completion.

However, a clear definition of engagement is the one given by Skinner & Belmont (1993, p.572): "Children who are engaged show sustained behavioural involvement in learning activities [...] they show generally positive emotions during on-going action, including enthusiasm, optimism, curiosity, and interest". Consequently, engagement has a positive impact on academic achievement and especially if we consider it in relation to a digitalised medium. Therefore, some of the most important teachers' duties are to prepare suitable activities for students in order to engage them in learning tasks and lead them towards successful task achievement.

## **THE STUDY**

### **Research Objectives**

At the end of high school, ESL/EFL students are expected to demonstrate mastery of the verb-tense aspect system so that they can communicate fluently and accurately in English. Besides, students can increase their performance in end of term tests and university entrance exams by mastering the use of Simple Present Perfect and Simple Past. Therefore, the objective of this study is two-fold. The primary objective is to use JClic (as an engaging tool) to determine its impact on student achievement in the use of Simple Present Perfect in English. The secondary objective is to analyse the effect of JClic on students' attitude and motivation towards learning these two tenses through this innovative method. Accordingly, the expected learning outcomes are that students, at the end of this project, will be able to:

- Use correctly Simple Present Perfect (to connect present time with past time) in written production (measured through comparison between 2<sup>nd</sup> and 3<sup>rd</sup> end of term exam results).
- Demonstrate positive attitude and motivation towards improving their knowledge of Simple Present Perfect and Simple Past through the computer-based JClic activities (measured with a motivation questionnaire based on a 5-point Likert Scale).

## Research Questions and Hypotheses

The main objectives of this study stemmed from the following research questions (RQs) and hypotheses:

(RQ 1): Does the use of JClic as a pedagogical tool increase students' performance in the correct use of Simple Present Perfect in written production?

1<sup>st</sup> Hypothesis tested:

As a result of using the JClic activities, either there will be a significant difference in students' performance (between 2<sup>nd</sup> and 3<sup>rd</sup> end of term exam scores) in the use of Simple Present Perfect, or there will not be a significant difference.

(RQ 2): To what extent does the use of JClic as a pedagogical tool affect students' engagement and motivation?

2<sup>nd</sup> Hypothesis tested:

As a result of using the JClic activities, as a motivating experience, students will either show a positive attitude and motivation towards improving their knowledge of the use of Simple Present Perfect through this method, or a negative one.

## METHODOLOGY

In this study we used a mixed-method approach for both qualitative and quantitative data, where the former seeks to describe the phenomenon in its natural setting, and the latter studies classroom assessment and grading. The rationale for combining quantitative and qualitative approaches in the present study is significance enhancement. Namely, as reported by Collins, Onwuegbuzie & Sutton (2006, p.76), the purpose of using mixed methods is to enrich data and increase interpretation of findings.

According to Creswell (2008, p.14) mixed-methods research consists of "procedures [...] in which the researcher converges or merges quantitative and qualitative data in order to provide a comprehensive analysis of the research problem." Besides, Johnson & Onwuegbuzie (2004, p.17) define mixed-methods research as "the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study." In other words, this approach gives a cognitive structure to the process of blending of the qualitative and quantitative methods for data gathering, analysis and interpretation.

### Method and Study Design

There are two types of variables in this study: quasi-independent and dependent. The JClic computer programme (pedagogical tool) is the quasi-independent variable, whereas students' 3<sup>rd</sup> end of term exam scores and the Motivation Self-Assessment Questionnaire belong to the dependent variable.

Additionally, motivation was measured with survey questions in the form of 5-point Likert-style agreement statements. Our intention during the development of the project was to administer a motivational and pedagogical tool in order to increase students' engagement in the classroom and overcome the difficulties they were facing with Simple Present Perfect.

## Context and Participants

The present research was carried out in the 'I.E.S. Álvaro Falomir', a high school located in Almazora (Castelló de la Plana, Spain). Almazora is a small coastal town in the Valencian Community, which has a population of approximately 26,000 residents. The participants involved in this research were 17 students in the 1<sup>st</sup> year of bachelor's degree programme, enrolled in Science and Technology Studies. Their ages ranged from 16 to 17 years old and 12 of the 17 subjects were females (70, 5%) while five (29, 5%) were males. According to the Common European Framework of Reference for Languages, their English level ranged between A2 and B1.

It is worth mentioning at this point, that during the observation stage, we noticed that students in this high school had scarce access to Internet and new technologies and this diminished their chance to learn English in an engaging and motivating way. So, our point of departure was to determine which pedagogical tool would be most appropriate to help us accomplish our objectives under the given circumstances.

The main reason for choosing this student profile was because the revision and practice of Simple Present Perfect and Simple Past was a part of the curriculum content. In addition, we chose the students in this classroom as subjects under research for two reasons: first, because of the poor results they obtained in the 2<sup>nd</sup> end-of-term exam, and second, because of the information we received from their teacher that their use of the English tenses was still low. We also considered the fact that students manifested a certain state of boredom when practicing the use of Simple Present Perfect and Simple Past through the "traditional" teaching methods.

Regarding participation in this investigation, although it was completely voluntary, we assigned students individual identification numbers in order to protect their identity. Finally, students were required to have a prerequisite level of computer knowledge. This requirement was met because the students in this classroom already mastered basic computer knowledge and skills needed to perform activities using JClíc.

## Data Collection Instruments

The present study contains two types of data: qualitative (descriptive information) and quantitative (numeric information). In fact, mixed methods were used in order to obtain a better triangulation and complementarity of the collected data. Both types of data were compared and analysed to measure the accomplishment of the objectives after the implementation of the programme. The following instruments were used to gather the data for this investigation:

- *JClíc programme*: This programme was the experimental treatment. It was used to judge its effect on students' achievement and motivation.
- *Motivation Self-Assessment Questionnaire*: It was used to measure students' level of interest in the subject matter, satisfaction with the JClíc activities, satisfaction with their performance level, confidence, self-efficacy, engagement and motivation.
- *Second and third end of term exams* were used to compare students' scores.

We now present the digital version of the JClíc activities:



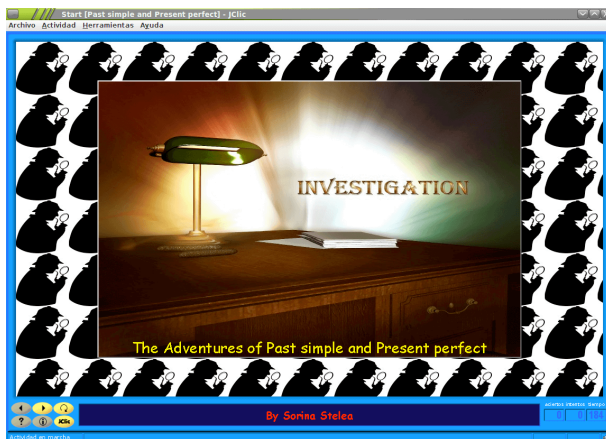


Figure 1. Front page of the JClc software

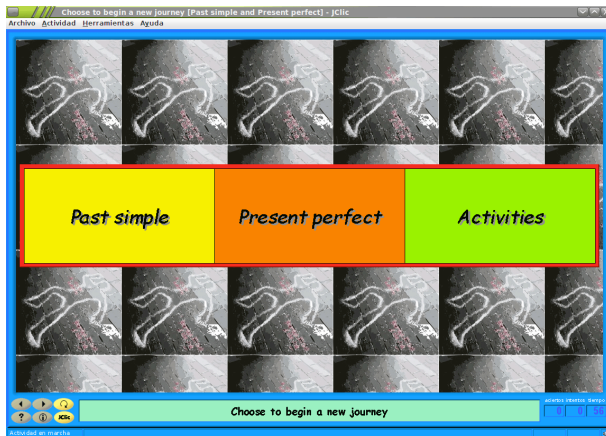


Figure 2. Simple Past – Simple Present Perfect – Activities

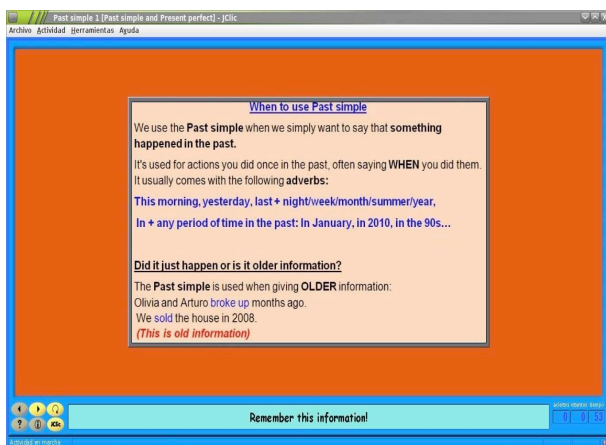


Figure 3. When to use Simple Past (1)

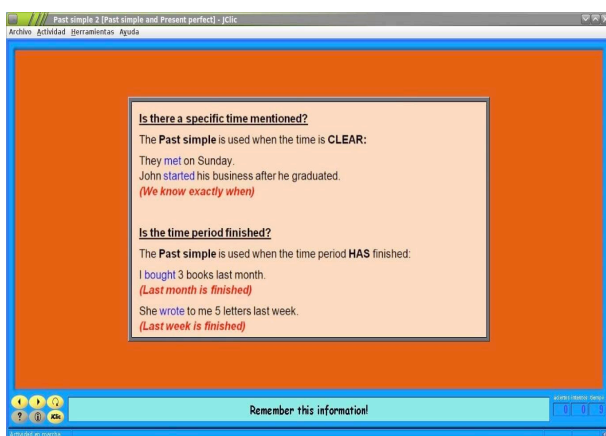


Figure 4. When to use Simple Past (2)

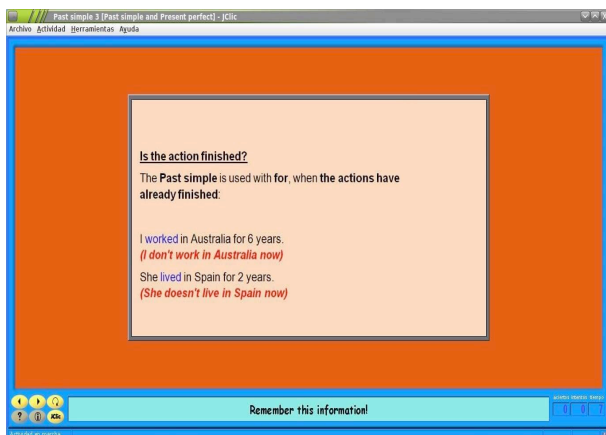


Figure 5. When to use Simple Past (3)

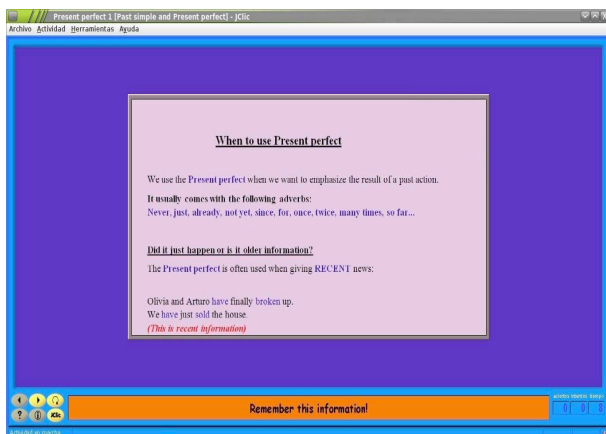


Figure 6. When to use Simple Present Perfect (1)

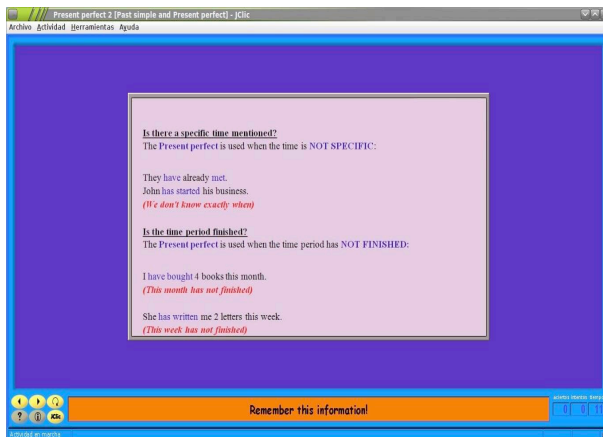


Figure 7. When to use Simple Present Perfect (2)

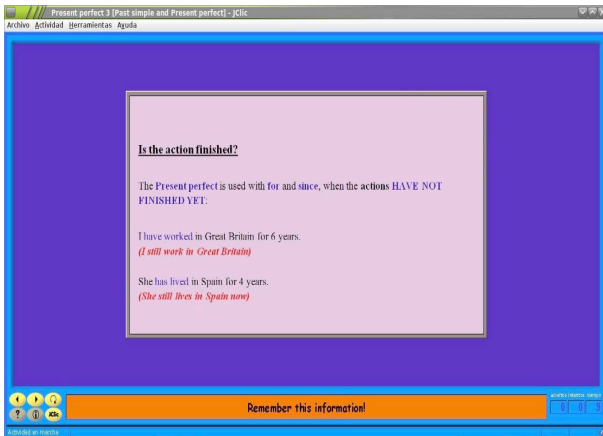


Figure 8. When to use Simple Present Perfect (3)

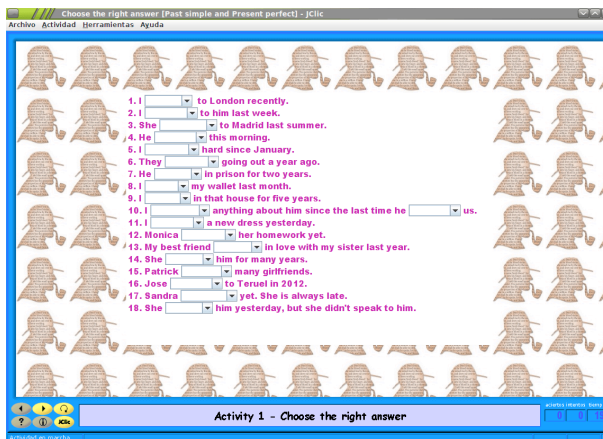


Figure 9. Activity 1



Figure 10. Activity 2

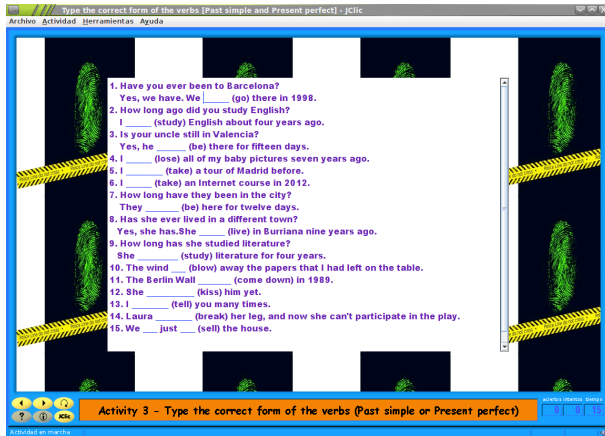


Figure 11. Activity 3

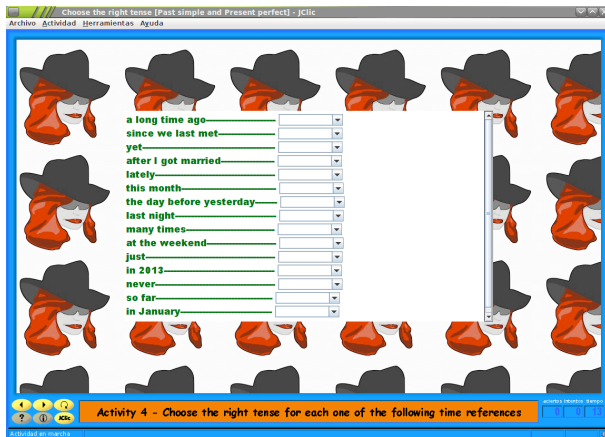


Figure 12. Activity 4

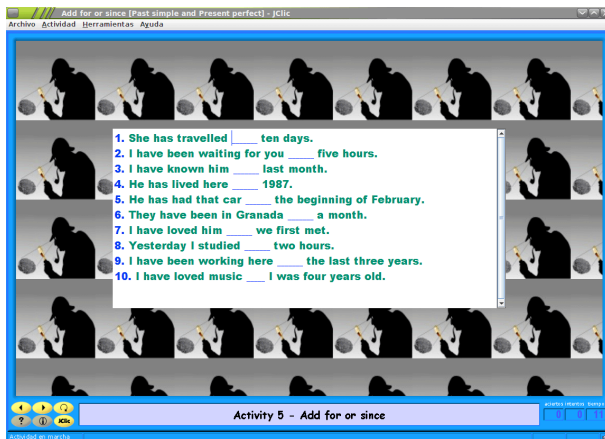


Figure 13. Activity 5

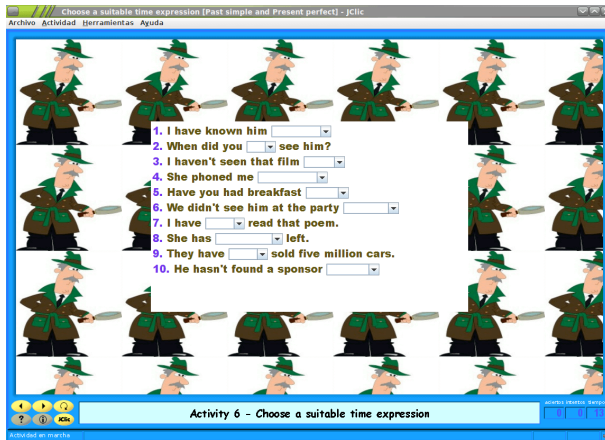


Figure 14. Activity 6



Figure 15. Activity 7

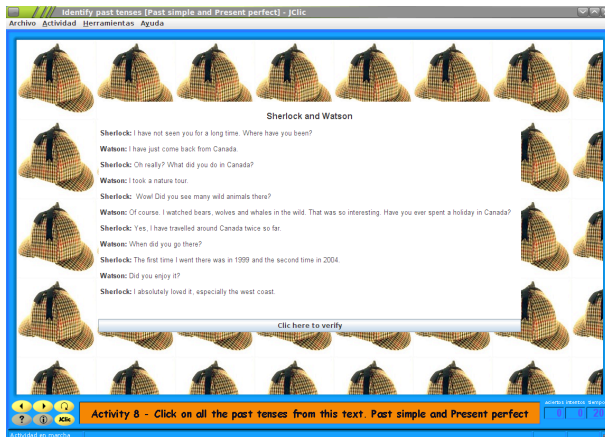


Figure 16. Activity 8

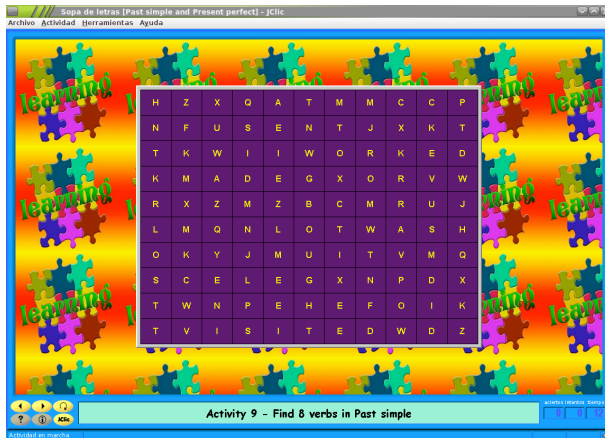


Figure 17. Activity 9

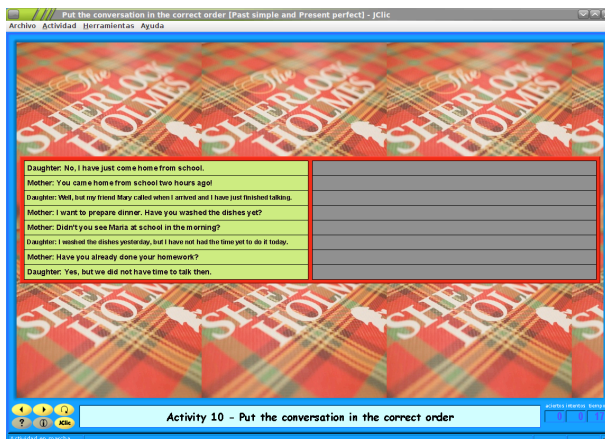


Figure 18. Activity 10





Figure 19. Activity 11

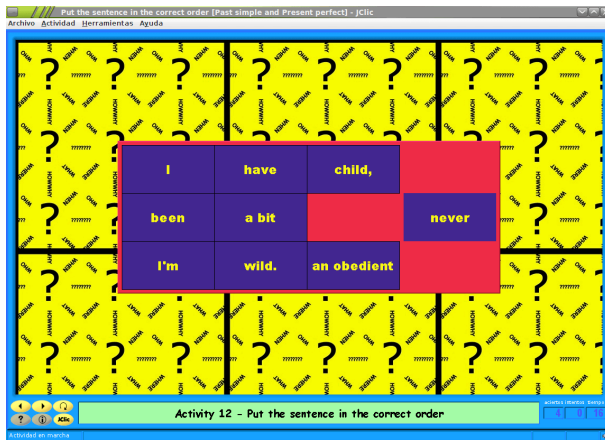


Figure 20. Activity 12



Figure 21. Activity 13

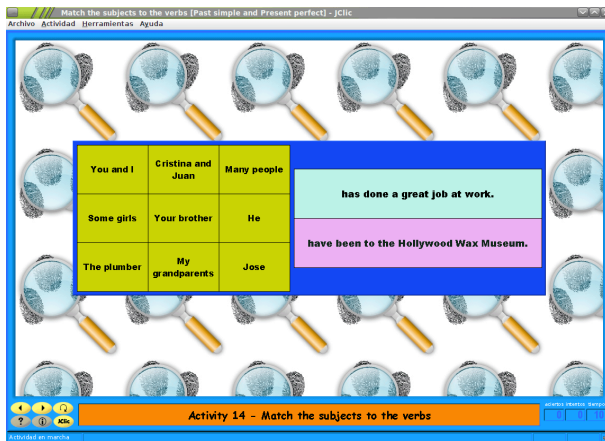


Figure 22. Activity 14

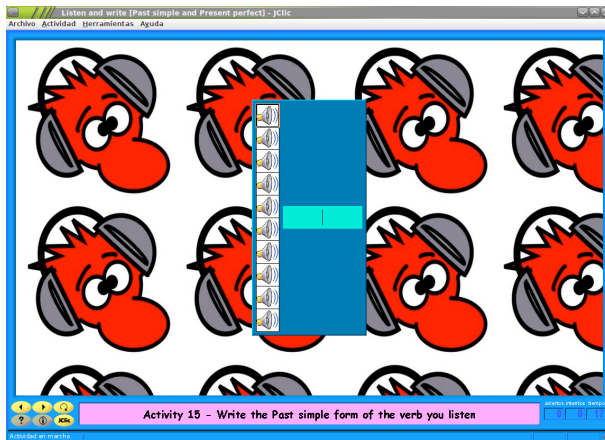


Figure 23. Activity 15

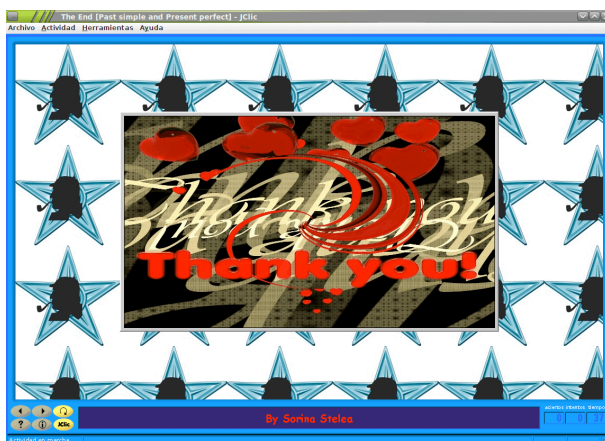


Figure 24. Back page of the JClíc software



### Motivation Self-Assessment Questionnaire

As previously stated, the Motivation Self-Assessment Questionnaire (Table 1) was used to measure students' level of interest in the subject matter, satisfaction with the JClic activities, satisfaction with their performance level, confidence, self-efficacy and engagement and motivation towards improving their use of the Simple Present Perfect through this type of instruction and training.

**Table 1:** Motivation Self-Assessment Questionnaire

STUDENT'S SELF-ASSESSMENT SURVEY	Definitely agree	Mostly agree	Neither agree nor disagree	Mostly disagree	Definitely disagree
The task was intellectually stimulating.					
I felt really nervous doing this task.					
I enjoyed doing this task.					
I felt confident about using Simple Present Perfect and Simple Past.					
I could do this again with no problem.					
I found this task useful.					
I widened my knowledge in this subject through this task.					
I widened my skills in this subject through this task.					
I am able to show my new knowledge in this subject matter.					

### Procedure

With the help of JClic we developed and implemented 15 training activities in an experimental classroom. The study consisted of three 55-minute sessions conducted over a study period of one-week in a computer laboratory where each student was assigned a computer to work on the learning activities. The sessions were organised as follows:

#### Session 1

This session started with a warm-up to grasp students' attention and to engage them in the steps that followed. First, students were given two printed images (visual aids to support the explicit

explanation) and then example sentences using the two tenses were elicited from them. In addition, for a better understanding of the differences in usage between Simple Present Perfect and Simple Past, students were informed about their formation and functions. Further, in order to determine whether the students understood what was taught, the information was drawn on a timeline on the blackboard and some example sentences were elicited from them. Also, to reinforce and summarize the information being taught, some extra information and examples of the Simple Present Perfect and Simple Past tenses were displayed on the computer screen. After that, students started to perform the computer activities designed to help them master the use of the two tenses.

In addition, during this session, students performed on the computer the following JClıc activities proposed:

- *Activity 1:* Choose the right answer (Simple Present Perfect or Simple Past)
- *Activity 2:* Finish the sentences (match with the proper time adverb)
- *Activity 3:* Type the correct form of the verbs (Simple Present Perfect or Simple Past)
- *Activity 4:* Choose the right tense for the following time references (Simple Present Perfect or Simple Past).

## Session 2

This practice session started with a warm-up to elicit students' answers and get them involved in the lesson. First, students were given a printed image ('For' and 'Since') with explanations of the use of Simple Present Perfect with 'for' and 'since'. Then, some example sentences were elicited from the students.

During this session, students performed on the computer the following JClıc activities:

- *Activity 5:* Add 'For' or 'Since' (Simple Present Perfect)
- *Activity 6:* Choose a suitable time expression (Simple Present Perfect and Simple Past)
- *Activity 7:* Find the mistakes and rewrite the sentences correctly (Simple Present Perfect and Simple Past).
- *Activity 8:* Read the story and identify the Simple Present Perfect and Simple Past
- *Activity 9:* Word search puzzle (Find eight verbs in Simple Past)
- *Activity 10:* Put the conversation in the correct order (Simple Past)

## Session 3

In the first part of this session students finished the JClıc activities. In the second part, students were asked to complete a Motivation Self-Assessment Questionnaire designed under the form of a 5-point Likert scale. The questionnaire was an adaptation of Keller's (2010) Instructional Materials Motivation Survey (IMMS) based on the Attention, Relevance, Confidence and Satisfaction (ARCS) Model of Motivational Design (developed by Keller in 1983, 1987). According to this model there are four stages for encouraging and underpinning motivation in the learning process: (1) attention (to stimulate students' curiosity and interest and sustain their engagement with the task), (2) relevance (to connect instruction to important needs and make the task useful), (3) confidence (to develop confidence in success) and (4) satisfaction (to encourage intrinsic and extrinsic reinforcement), (Keller, 1983, pp. 391, 396).

The purpose of the questionnaire was two-fold: first, to examine to which extent the JClıc activities affected student' level of motivation (and determine whether students were motivated to

engage in the JClic activities); and second, to measure students' level of satisfaction with the JClic activities and learning achievements.

During this session, students performed on the computer the following JClic activities:

- *Activity 11*: Match the questions to the pictures (questions in Simple Present Perfect)
- *Activity 12*: Put the words in the correct order to make a sentence (Simple Present Perfect)
- *Activity 13*: Turn the sentences into negative and use the contracted form of the verbs (Simple Present Perfect and Simple Past).
- *Activity 14*: Match the subjects to the verbs (Simple Present Perfect 'have' / 'has')
- *Activity 15*: Write the past simple form of the verb you listen (verbs listening)

Furthermore, it is worth mentioning that the objective test items used in the present study are illustrative of the entire domain that we seek to reinforce and assess. In other words, the test has content validity because the scores measure what students have learned in the classroom (i.e. the accomplishment of the proposed goals). Besides, with this type of practice and testing we sought to stimulate students' prior knowledge and skills, to arouse their attention, to offer them possibilities to practice and reinforce their knowledge on the subject matter, to provide them a feeling of achievement, and to help them monitor their own knowledge and personal improvement.

On the other hand, the JClic project offered us an opportunity to transform traditional instruction with paper-based assessment into computer-based instruction with computerized performance assessment, and compare students' results from both instructional methods. Thus the JClic instructional activities included in this project can be regarded as beneficial in promoting the acquisition of specific grammatical points (e.g. Simple Present Perfect and Simple Past).

## **RESULTS AND DISCUSSION**

The purpose of this section is to examine the quantitative and qualitative data collected and to discuss the research findings. The quantitative data were gathered from test scores. The qualitative data were obtained from the 'Motivation Self-Assessment Questionnaire' and were used to examine students' attitudes, behaviours and answers.

The research questions of the present study drove the data collection and the subsequent analysis. Important to note also is that the main aims of our research project were to improve students' ability to distinguish between Simple Present Perfect and Simple Past, to be able to use appropriately these two tenses in written production and to demonstrate change in the level of motivation towards improving their knowledge of these tenses.

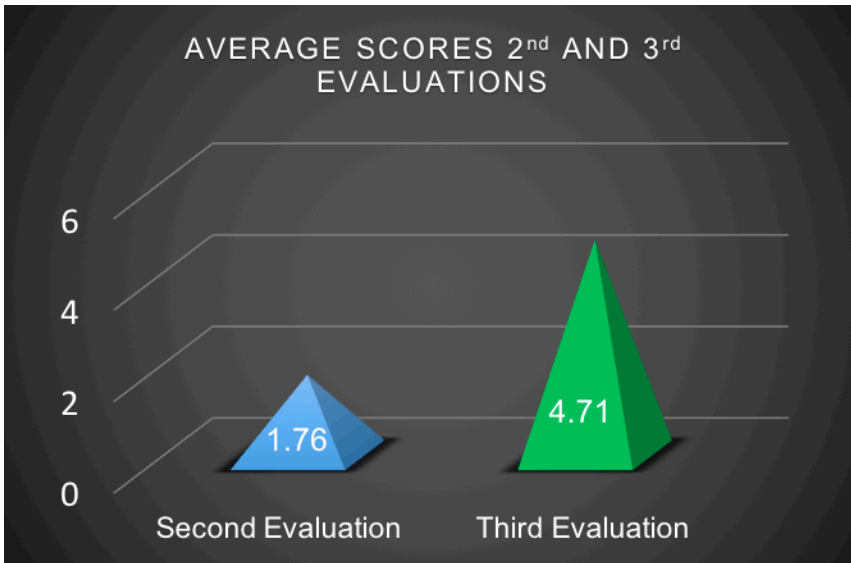
The findings presented in this section demonstrate the potential of using JClic as a pedagogical tool to create personalized learning environments, to improve students' abilities on specific grammar points, and more importantly to increase their engagement with the subject matter and to promote positive attitudes towards learning to use correctly the Simple Present Perfect or Simple Past.

### **Results for the First Research Question**

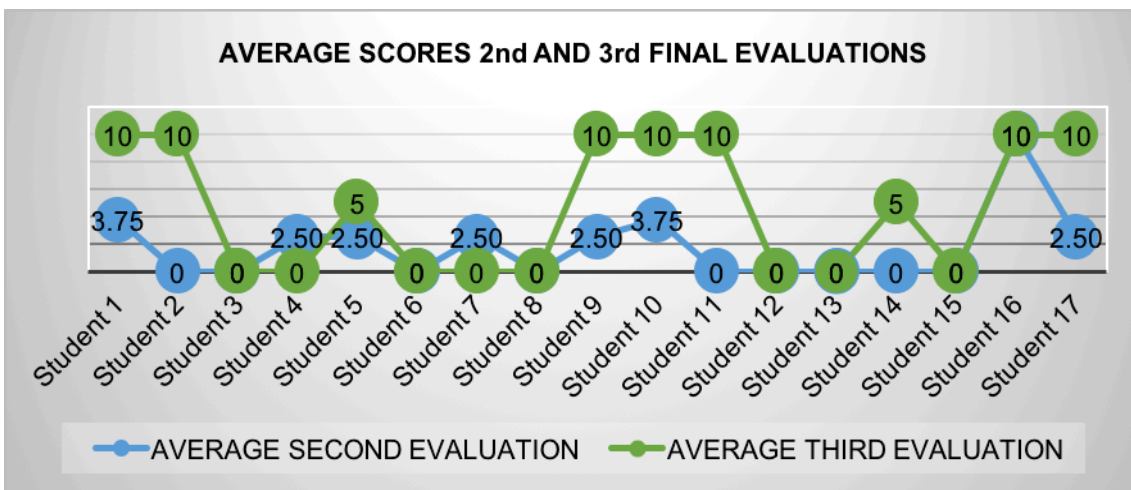
In order to establish the significance of the difference in the arithmetic means and know whether or not the JClic programme was effective in helping students improve their knowledge of Simple

Present Perfect, we used the paired two samples for means Student T Test in Excel 2013. Particularly, this tool helped us compare the before and after treatment scores from the same group at different times (2<sup>nd</sup> and 3<sup>rd</sup> academic terms).

As shown in Graph 1, the average of the pre-test (2<sup>nd</sup> end of term exam results) is lower than the average of the post-test (3<sup>rd</sup> end-of-term exam results): 1,76 < 4,71.



**Graph 1:** Average Performance 2<sup>nd</sup> and 3<sup>rd</sup> End of Term Exams



**Graph 2:** Differences in Student Performance between 2<sup>nd</sup> and 3<sup>rd</sup> Final Evaluations

As the results show in Student T- Test the p-value for the two tailed hypothesis is 0, 01130 which is lower than 0, 05. In addition, the t value is calculated to be -2, 8617. Then, we can conclude with 95% confidence that there is statistically significant difference in the population means and that the results are not due to randomness.

**Table 2: T-Test Paired Two Samples for Means**

<b>T-Test Paired Two Samples for Means</b>		
	<b>Second evaluation</b>	<b>Third evaluation</b>
Mean	1,7647	4,7059
Variance	6,6521	23,3456
Observations	17,0000	17,0000
Pearson Correlation	0,4831	
Hypothesized Mean Difference	0,0000	
df	16,0000	
<b>t Stat</b>	<b>-2,8617</b>	
P(T<=t) one-tail	0,0057	
t Critical one-tail	1,7459	
<b>P(T&lt;=t) two-tail</b>	<b>0,01130</b>	
t Critical two-tail	2,1199	

Therefore, the findings illustrate that there has been an improvement in students' knowledge of Simple Present Perfect, which means that our training programme was effective.

### Results for the Second Research Question

In addition, another reason why we implemented this type of instruction and practice for this specific grammar point was to diminish the threat that the lack of motivation could hinder a relevant interpretation of the achievement test scores.

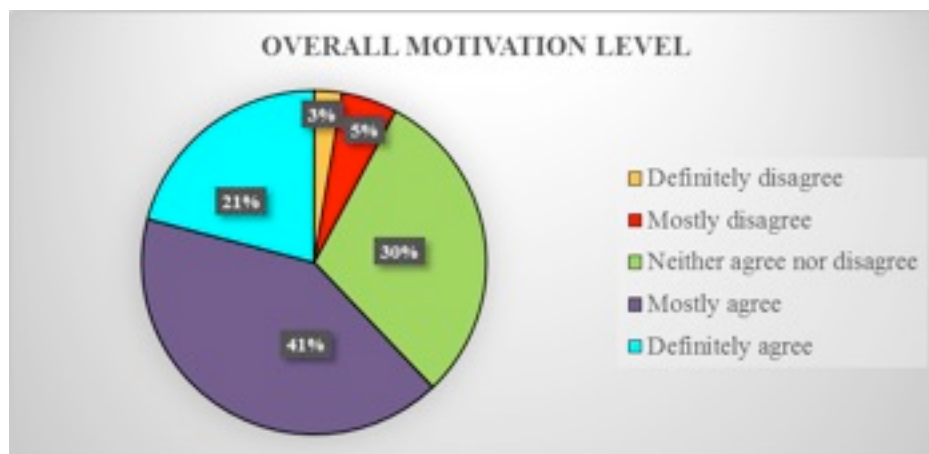
Regarding the second research question, to measure students' level of learning motivation, a five point Likert-type scale (Table 3) was used. Although a typical five-level Likert scale includes the following options: agree, strongly agree, undecided, disagree and strongly disagree, in our study we have used the same options as the UK National Student Survey: definitely agree, mostly agree, neither agree nor disagree, mostly disagree and definitely disagree. Therefore, students' general level of motivation was measured and interpreted according to the criteria in Table 3.

**Table 3: Likert Items Interpretation Criteria**

<b>LIKERT ITEMS</b>	<b>INTERPRETATION</b>
Definitely agree	High level of motivation
Mostly agree	Moderate level of motivation
Neither agree nor disagree (undecided)	No opinion – neutral point
Mostly disagree Definitely disagree	Low level of motivation

Subsequently, the neutral middle point ('neither agree nor disagree / undecided') was included in the self-assessment questionnaire to diminish the random error variance and to increase the reliability and validity of the response scale (Johns 2010, Lietz 2010).

However, the analysis of the general level of motivation excluded the 'neither agree nor disagree' answers to avoid misinterpretation. On the other hand, our interpretation was that the students who answered 'neither agree nor disagree' felt neutral on the matter (or had no clear opinion about it). In addition, the overall motivation level is expressed in percentages in the Graph 3.



**Graph 3:** Overall Motivation Level

As illustrated above, 41% of the students answered *mostly agree*, and 21% *definitely agree*, which means that the total level of agreement is 62%. On the other hand, 3% of the students answered *definitely disagree* and 5% of the students *mostly disagree*, which means that the total level of disagreement is 8%. There are also a percentage of undecided students, (30%, as found in the survey results) which did not have a clear opinion about the effects of the programme on their level of motivation.

However, taking into account the previously established criteria, the results show that more than half of the students (62%) felt motivated and demonstrated high level of satisfaction with the task. In other words, the findings supported our second research hypothesis as more than 50% of the students have shown a positive attitude towards improving their knowledge of the Simple Present Perfect with the JClíc computer-based activities.

## LIMITATIONS

In the present study, the findings should be interpreted with caution due to the following major problems and limitations encountered:

- This study and its findings are confined to the 1<sup>st</sup> Year of *Bachillerato* (Bachelor's degree programme) students in the academic year 2013/2014 in I.E.S. Àlvaro Falomir, Almassora (Castellón).

- The number of participants was not randomly assigned because the number of students was the one decided by the tutor teacher. Therefore, the results of the study cannot be generalised to other settings.
- The study is restricted to two aspects of language: present perfect simple and past simple tenses.
- Access was limited to school computer lab as it was reserved for specific courses.
- Due to some technical limitations (of the computer laboratory) we were not able to use the JClic Report programmes to manage a database and compile the results of the JClic activities. So, the only possibility was to write it all down on a piece of paper. Then, a one-page form was prepared with the information that appeared to the right of the message box (score, tries, time). In addition, after completing each activity, students were required to fill out the form with the numbers displayed in the message box.
- The teachers in this school did not use ICT in the English classroom. The interview with more experienced teachers in ICT would have benefited this thesis proposal.
- In the absence of control group, the differences between pre-test and post-test may not be causally related to the intervention.
- In the 3<sup>rd</sup> end-of-term-exam there were fewer sentences in which students' knowledge of present perfect simple was tested when compared to the 2<sup>nd</sup> end-of-term exam. This could be a threat to the internal validity of the study.
- This small-scale quasi-experimental research was carried out in a comparatively short period of time. Therefore, we lacked time to conduct a second cycle of action research and make improvements to the project.

## **CONCLUSIONS**

The main objectives of this investigation were to determine the effect of the use of JClic as a pedagogical tool on student performance in the use of Simple Present Perfect (by presenting it in contrast with Simple Past) as our research focuses specifically on this tense, on the one hand and on student engagement and motivation, on the other.

Many researchers, such as McCarthy (1994); Nagata (1996); Nutta (1998); Norris & Ortega (2000); Chapelle (2003); Rabab'ah & AbuSeileek (2009); Ross, Morrison & Lowther (2010); Livingstone (2012); Girón-García (2013) and Stasinakis & Kalogiannakis (2015), emphasized in their studies the numerous advantages that can be attributed to CAI when used to transform and complement traditional approaches to learning. These include student-computer interaction, immediate feedback, self-correction, vocabulary practice, problem-solving activities, different types of educational games, reinforcement and practice of difficult grammar points and improvement in interest, engagement and motivation.

The findings of the current research clearly support our tested hypotheses. Therefore, some positive conclusions can be drawn from the results obtained. In relation to the first RQ the general performance level in the JClic activities was very good which indicates that most of the students improved their knowledge of the Simple Present Perfect. Following this line, with regards to the second RQ, and in the light of the results obtained, we could affirm that the overall motivation level was high, which means that the use of JClic in the classroom was a good strategy to enhance the language learning process and to reach the research objectives. Moreover, taking into account that the findings of this study have shown such positive results concerning students' motivation and satisfaction with the task, we can conclude that the introduction of JClic as a technological and pedagogical tool in language teaching encouraged the growth of motivation, self-efficacy and metacognition.

In addition, the pedagogical implications of this study should be contemplated taking into account its utility and limitations. The main benefit is the development and justification of a new technological and pedagogical tool to facilitate students' understanding and learning of Simple Present Perfect and then measure their performance on it. On top of that, to increase students' ability to reflect on their learning and to develop their metacognitive and critical thinking skills, a 'Motivation Self-Assessment Questionnaire' is used.

Further, the following is noted about the JClic tool: (1) it promotes student-centred learning by moving the focus of instruction from the teacher to the student and fosters the main concepts of language acquisition: motivation and interaction; (2) it offers the possibility to create and adapt lesson plans to all knowledge levels and educational needs, including specific disabilities that need to be dealt with in individual ways; (3) the JClic software not only can be used for teaching and training purposes but also for educational games or for quick assessment (as an entertaining non-traditional assessment procedure); and (4) the use of JClic in the present study answers to the real-life pedagogic needs of the English language learners with specific grammar difficulties.

Additionally, this project may be regarded as a starting point for language teachers to further reflect on their teaching practices regarding the correct use of the Simple Present Perfect and Simple Past. Additional research could focus on creating JClic quizzes for homework to reinforce specific grammatical features in an entertaining way. Therefore, this may be favourable both for students, to widen their grammar practice to sessions outside the classroom with the help of the online learning environment, and for teachers, to better address students' individual needs and learning styles.

On the other hand, this research study may be valuable for FL methodologists as it covers different competences and includes the use of ICT to enhance learning, make it more enjoyable, and make specific grammar points easier to understand. Likewise, student performance data can be used to improve academic achievement and school success. It can also support instructional decision-making, due to the use of JClic as it can be a practical, cost-effective solution. Finally, this research may inspire other researchers to conduct further studies on the same topic, which will enrich the existing records in language teaching and research.

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