THE EFFECTS OF CALL ON L2 VOCABULARY ACQUISITION:
AN EXPLORATORY STUDY

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Abstract—The goal of this paper is to report a study whose primary aim was to investigate the effects of Computer Assisted Language Learning (CALL) on the acquisition of L2 vocabulary by adults. Other specific goals are: analyze students’ reactions towards the use of CALL activities; verify whether there was increase on participants’ level of digital competence (DC) along the study; and investigate the relationship between DC and the computer-mediated tests. The participants were 24 students enrolled in a technical Computing program at a federal educational institute in Brazil. This study adopted statistical and qualitative analytical procedures for data triangulation. The instruments of data collection employed for the statistical analyses were: the results of the paper-and-pen pretest, the two paper-and-pen posttests and the two online posttests. As for the qualitative analysis, data were collected through questionnaires and students' posts in forums on the Moodle platform. Results revealed that: there was a significant amount of acquisition of L2 vocabulary; there were no significant differences between students’ performance in the printed posttests and in the online posttests; the effects of CALL are positive; there was an increase of the participants’ levels of DC along the study; and it was not found a relationship between the participants’ levels of DC and the computer-mediated posttests. Lastly, the results expose that the combination of two dissimilar but complementary approaches: CALL and Face-to-Face interaction (FtoF) – Blended Learning (BL) - in an English course is well accepted by the students and contribute to L2 vocabulary acquisition.

Index Terms — Blended Learning, vocabulary acquisition, Digital Competence, CALL

I. INTRODUCTION

This study, regarding Computer Assisted Language Learning (CALL) and second/foreign language (L2) vocabulary acquisition, was carried out in the context of an English for Specific Purpose (ESP) course, and also within the context of vocational education in Brazil. Its goal was to investigate whether L2 vocabulary acquisition can be enhanced by the use of CALL activities. It is expected that this study will bring findings that might contribute to recent research on hybrid contexts of L2 vocabulary teaching-learning.

II. REVIEW OF LITERATURE

This section presents a very brief review of the literature pertinent to the central question investigated in this study: whether L2 vocabulary acquisition can be enhanced by the use of computer-mediated (CALL) activities.

CALL is an umbrella term for any attempt which involves teaching and learning a language meaningfully by means of computers and allied technologies of all kinds, such as desktop or laptop computers, tablets, smart phones, mp3 players, interactive whiteboards, to cite but a few examples. According to this taxonomy, CALL can take place, for instance, during the use of a vocabulary flashcard program, a set of online grammar exercises, a language learning activity involving a word processor, email program, or web search engine like Google afforded by computers [1].

Concerning vocabulary, part of a language development program is the teaching-learning of vocabulary [2]. Several linguists and cognitive psychologists place lexis at the core of human language processing, emphasizing the fact that vocabulary acquisition is an important part of successful L2 learning [3]. During the 1990s, vocabulary gained more attention, if compared to the years before that, being considered a crucial component for successful communication in a second/foreign language. Nowadays, vocabulary is widely recognized as a central area of knowledge in any language [4]. It is recommended that the time of a balanced language course should be divided into four main foci: meaning-focused input and output, fluency development, and language-focused or explicit learning. The spaced repetition of key words is also important. When words are repeatedly encountered, there are more chances for vocabulary learning to happen. In addition, the process of using words creatively also aids in the development of L2 vocabulary [5]. This study was planned according to these suggestions among others.

In relation to Blended Learning (BL), it has attracted the attention of researchers in the area of L2 acquisition [], who understand that for L2 education to be successful, learners and teachers need to combine two dissimilar but complementary approaches: CALL and Face-to-Face (FtoF) interaction [7]. With the continuous development of old technologies and the creation of new ones, we have been observing and experiencing the integration of these technologies with more traditional learning programs creating new BL teaching-learning environments. It was in the context of BL that this study was carried out.
III. METHOD

This study was guided by the primary aim of investigating the effects of CALL on the acquisition of new vocabulary in an ESP course for adults. It is also guided by four other specific goals, (1) to analyze the reactions, perceptions, and attitudes of ESP students towards the use of CALL activities; (2) to verify whether there was an increase on participants’ DC within the period of the study; (3) to investigate the relationship between DC and the computer-mediated tests; and (4) to suggest ways in which CALL activities can be integrated into ESP courses for adults.

In order to reach the objectives of the present study, five Research Questions (RQs) were pursued: RQ1: What are the effects of CALL on the acquisition of new vocabulary in an ESP course for adults?; RQ2: What are the participants’ reactions, perceptions, and attitudes towards the use of CALL in an ESP course?; RQ3: Was there an increase on participants’ digital competence along the ESP course?; RQ4: Was there any relationship between the level of digital competence and participants’ performance on the computer-mediated tests?; RQ5: In which ways can CALL be integrated into ESP courses for adults?

The participants were 24 adult students enrolled in a Technical Computing Program at Instituto Federal de Santa Catarina (IFSC)/câmpus Gaspar. They were taking an ESP course as part of the Computing Program. Their English teacher was this researcher. This study employed a mixed-methods design [8]. and adopted statistical and qualitative analytical procedures for data interpretation.

The following instruments of data collection were used for the statistical analyses: participants’ scores in the five tests administered, that is (1) the paper-and-pen pretest; (2) the paper-and-pen immediate posttest (PPIMpost); (3) the computer-mediated immediate posttest (CPIIMpost); (4) the paper-and-pen delayed posttest (PPDEpost); and (5) the computer-mediated delayed posttest (CPDEpost).

As for the qualitative analysis, the following instruments were used: (6) participants’ responses to the beginning-of-the-term survey online questionnaire; (7) participants’ posts in the forums available in the virtual teaching learning platform (MOODLE); (8) participants’ responses to the end-of-the-term online questionnaire; (9) participants’ responses to the oral semi-structured interviews; and, finally, (10) the teacher's field notes. Various answers to both online questionnaires were also used in the statistical analysis. These include the answers to questions related to students’ levels of abilities, comfort, and motivation regarding specific computer and Internet tasks.

III. RESULTS

The statistical analyses performed on the data set obtained from the participants in the five different conditions: pretest, PPIMpost, CPIIMpost, PPDEpost, and, finally, the CPDEpost, yielded four main results. Firstly, as a result of the descriptive analyses, it could be concluded that participants’ performance on the pretest was worse than that in the posttests, suggesting that they had learned and, therefore, performed better, at the end of the ESP course when the posttests were administered. Secondly, results of the Friedman statistical test showed that there were statistically significant differences between participants’ performance on the pretest and the four posttests, as expected by the descriptives. Thus, the ESP course designed for this study had a significant impact on participants’ performance on the posttests.

Thirdly, results of the Wilcoxon statistical tests showed that there was no statistically significant difference between participants’ performance on the immediate posttests, whether they were made though paper-and-pen or computer. In other words, it made no difference whether the test was made by means of the computer or by means of paper-and-pen immediately after the ESP course. In addition, this result indicates that the tests had the same level of difficulty as planned a priori.

Fourthly, Wilcoxon tests were also applied to find out whether there were statistically significant differences between tests performed by means of the computer and paper-and-pen. Results of these statistical tests indicate that there were no significant differences between participants’ performance on the computer-mediated posttests or on the paper-and-pen posttests suggesting that, regardless when the tests were applied students’ performance was the same. Additionally, the results indicate that the tests had the same level of difficulty as carefully planned a priori to avoid practice effects. Nevertheless, statistically significant differences were found between the CPDEpost and the PPIMpost (and between the CPDEpost and the PPDEpost tests). Accordingly, the CPDEpost, when compared with the paper-and-pen posttests, presented statistically significant differences showing better results for the CPDEpost.

When the PPDEpost and the CPDEpost, which were applied on the same day but in different orders to analyze testing effects were compared, results of the Mann Whitney U statistical tests showed that there were no testing effects. Therefore, regardless of the order of test presentation, the results remained the same: participants performed better on the CPDEpost, taking it before or after the PPDEpost. Hence, the order of presentation did not influence test results.

As for the qualitative and quantitative analyses, the following sources of data were compiled and analyzed: (1) students’ responses to the two online questionnaires; (2) students’ posts in the forums available in the virtual environment - Moodle; and (3) students’ self evaluations. According to the answers of both questionnaires, the students felt they had acquired more experience with computer at the end of the course. Also, they showed preference for
performing CALL activities and having classes in the computer lab if compared to the traditional paper-and-pen activities and the classroom.

Regarding their expectations in relation to the ESP course, 80% of the participants of this study reported that they were met in that semester, although, at the beginning of the course, it was observed that the students did not have great expectations concerning their future English course. The indication that they had their expectations met, contributes to corroborate the fact that students had a positive impression concerning the course they were taking.

As regards motivation, the total general means percentage, measured at the end of the semester, was not very high: 69%, which indicates that participants did not feel very motivated to perform several tasks using the computer. Even so, students performed well on the exams. Additionally, most participants enjoyed all the activities performed either at the computer laboratory or in the classroom and they did not have many difficulties performing tasks online on the Moodle platform. Concerning interaction and feedback, both constructs were evaluated positively by the majority of the students. By way of example, the many instances of feedback provided by the teacher during FtoF interactions and also via the Moodle platform (e.g., during the discussion forums), contributed to promote interaction among the students and between the teacher and the group.

In addition, the participants increased their levels of DC along the course. Students’ level of DC was measured at the beginning of the course (DC1) and at the end of the course (DC2). The result was positive: the level of DC1 was 69% and the level of DC2 was 76%. Moreover, in general, students benefited from the environments where the classes were conducted and they felt comfortable doing the majority of the activities. Thus, students evaluated positively the BL environment designed specifically for this study. Also, students evaluated their own performance and the ESP course, positively. They were aware of the fact that they had improved their learning in the English language, in general, and their abilities in the L2, in particular, such as reading and listening. For the most part, students could understand texts in English easier and they also learned more about vocabulary related to Computing, if compared to their performance in the pretest, for instance.

Students appreciated the printed and the online evaluations because, through them, they could follow and monitor their progress in the L2 learning process along the course. Also, the practice of several exercises and the repetitions of the same exercises and lexical items present in them, contributed to the learning and retention of new vocabulary in English.

By way of summary, there is much more evidence to suggest that the ESP course was well accepted by the class in view of the several positive comments provided by the group. There were very few negative observations, and they were restricted to just an irrelevant number of participants. Thus, the negative comments and complaints may not be generalized.

Regarding the correlational analyses, Pearson’s $r$ was applied to analyze the relationship between students’ level of DC1 their level of DC2. The indexes presented a significant association. Thus, there was a tendency in the increase of the index of the DC1 when the index of the DC2 increases. For the other associations, Spearman’s rho was employed for the analysis. The results showed that there was no correlation between the level of DC2 and the two computer-mediated posttests.

Finally, when comparing students’ motivation level with their performance on the four posttests, the results of the statistical tests showed no relationship.

IV. CONCLUSIONS

Five main results were obtained from the present study: (1) there was a significant amount of acquisition of L2 vocabulary, as shown by the participants’ performance on the posttests as compared to the pretest; (2) there were no significant differences between the printed and the online posttests; (3) the impact of CALL is positive; (4) participants enjoyed the opportunity to perform activities on the Moodle platform and to have immediate access to online dictionaries and search sites; (5) there was an increase in the participants’ levels of DC within the period of the study; and (6) there was no correlation between the participants’ levels of DC and the computer-mediated posttests.

The participants of this study reported they were aware of the fact that they were learning through the approach employed. At the same time, they acknowledged that the traditional paper-and-pen activities contributed to their learning process as well. Therefore, the BL environment where this study was conducted fostered L2 vocabulary acquisition.

Taken together, the results show that the combination of two dissimilar but complementary approaches - CALL and FtoF interaction – BL – [7]. in an ESP course is well accepted by the students and contribute to L2 vocabulary acquisition. Results of this study add evidence to the fact that ESP courses do not need to be connected to the teaching of reading only [9]. In other words, ESP courses can be designed in a way so that other abilities may be developed. The blending of computer-mediated activities with traditional or printed activities in the process of teaching-learning English allows the development of oral and written abilities and students’ levels of Digital Competence, enhancing their chances of engagement in tasks and of retention of new vocabulary.

REFERENCES


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